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COMPUTERWORLD

Demand for IS talent soars

By Julia King and Erin Callaway

Money talks, but it does not always buy top-notch talent in today's red-hot information systems job market. Recruitment also takes plenty of perks, such as on-site day care, exercise facilities or a fully equipped home office.

The reason is simple. Demand for IS professionals skilled in today's booming technologies far outstrips supply.

As of December 1994, the job market was up a whopping 44% over 1993. Compared with 1992, the number of available IS jobs has increased by 64%, according to a Mississippi State University study of want ads from 10 major U.S. cities.

Last week, IS recruiters confirmed that business is extra brisk, especially in the health care and financial services industries. Companies in all businesses are looking for experts in distributed technologies with finely honed skills and plenty of hands-on experience, headhunters agreed.

"Companies pay me to find people who aren't looking for jobs," said Michael Mantel, a partner at technical recruiter BMW Group, Inc. in New York. "They're not interested in the brand-new applicants."

Techie top guns

The hottest software positions, according to a survey of 100 IS managers

- Application developer (C++)
- Database developer (Sybase)
- Unix systems administrator (Solaris)
- Application developer (Windows)
- Database developer (Oracle)

Source: Pencom Systems, Inc., New York

In the driver's seat

Given this employment boom, IS job seekers with highly sought-after skills are in a prime position to ask for plum deals. People with networking and Oracle Corp. database skills in particular "can pretty much write their own ticket," said Violet O'Brien, a technical recruiter at The Whittaker Co. in Houston.

Meanwhile, IS managers

Jobs, *page 155*

Much ado about Windows logos

By William Brandel

Maybe there is a future for 16-bit applications after all.

In an effort to appease developers who had expected to be selling 32-bit applications sporting the Windows 95 logo by now, Microsoft Corp last week said it will extend licensing terms to developers for the Windows 3.1 logo.

Those licenses, which allow Microsoft-certified applications to carry the Windows 3.1 logo, were set to expire in April.

The logo is a Microsoft guarantee that the software will run with Windows. It is also seen as a way for Microsoft to provide a portfolio of applications that will run with Windows NT.

Perhaps most telling, the license extension indicates that vendors, including Microsoft, realize that users will continue to demand 16-bit Windows applications.

As a result, 16-bit Windows applications strategies — which might have been shelved by now had Microsoft met its original Windows 95 ship date of December 1994 — are being revisited by software vendors.

Both Lotus Development Corp. and WordPerfect, the Novell, Inc. Applications Group, for example, said they will continue to develop and deliver new 16-bit Windows of-

Windows logo, *page 16*

On-line options blooming

Hearts afire on the 'net

By Ellis Booker and Thomas Hoffman

Love is in the air this week, and on the wire, too.

On St. Valentine's Day, modem-equipped romantics will be able to take part in a range of romantic activities, including the following:

- Sending electronic valentines to their sweethearts.
- Entering interactive "chat" rooms to find that special someone.
- Searching on-line personal ads.
- Scanning electronic-mail directories for the address of a lost love.
- Buying and sending flowers, chocolates or lingerie.

How much of this data traffic will result in lasting relationships is anyone's guess. What is clear, however, is that for every bauble being marketed electronically, relatively few will ac-

Hearts afire, *page 14*

IBM to unveil Internet Link for support

By Ellis Booker

IBM plans on Feb. 28 to unveil an internet version of Link, its long-standing, proprietary customer-support network, company sources confirmed last week.

The 6-year-old on-line system supports some 200 applications in six broad categories and provides a host of customer-support systems — including access to company product and help databases, technical forums and servers with downloadable software.

IBM sources said the Internet Link will be geared to providing service and support rather than positioned as a general-purpose information network like Microsoft Corp.'s Microsoft Network.

Just last week, Microsoft announced the first wave of content providers for its network. The list, which includes Dell Computer Corp., AST Research, Inc. and Lotus Development Corp., will be expanded during the next few months to include news and information providers, Microsoft said.

Microsoft plans to launch its public data network, which will be tightly integrated with the Windows 95 operating system, in Au-

IBM, *page 14*

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Fed agency gets a client/server grip

By Gary H. Anthes
WASHINGTON

At 3 feet tall and 78 feet long, the flowchart in Larry Byrne's office might seem adequate to depict the workings of the entire federal government.

But it isn't.

"This is the process for moving a foreign service officer from one mission to another," said Byrne, assistant administrator for management at the U.S. Agency for International Development. "It takes 18 months and one staff-year of effort to move one person."

Even by Washington standards, the red tape at AID is staggering. But Byrne and his management team are hacking away the regulatory kudzu as they sweep aside the agency's ancient computer systems and haul in new client/server applications.

At a time when billion-dollar giveaway programs are being viewed with disfavor throughout the U.S. Congress, the rein-

Federal agency, *page 28*

Did you ever feel as if something that happened before is happening again?
Did you ever feel as if something that happened before is happening again?
Did you ever feel as if something that happened before is happening again?

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It's déjà vu. You've been here before.

The hardware is different. The systems are different. But the problems look awfully familiar. Operations management, resource management, storage management, configuration management, application management, problem management. Doesn't some of this stuff go back to Univac II? And yet, here you are at square one, spending way too much time on the most mundane part of your job. If only there was some management software out there that actually helped. Well, actually, there is. At Legent, we've put together the most extensive set of industrial-strength, distributed systems management tools available. We've also developed an open architecture called XPE that, according to some of the toughest analysts in the business, is pretty remarkable. As a result, our software works together across almost anything you can wire together, regardless of function or platform, from mainframes to UNIX servers to PC LANs. Which means you can manage your systems from the platform of your choice, something our customers tell us has definitely made their lives easier. Think of it: systems management tools that really work. It's déjà vu all over again.

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What's Inside

February 13, 1995

The Virtual Internet Forum

We've brought together the "digerati" – best-selling Internet book authors – to wax eloquent on Internet security, navigation and common mistakes business users make. **See In Depth**, page 122.

NEWS

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■ Networks based on X.400 will become the backbones of choice for corporations in the next 12 to 18 months. *Page 4*

■ IBM pulls back on plans to market Windows NT versions of products such as CICS and DB2. *Page 6*

■ Novell is integrating voice mail with its **GroupWise** product offering. *Page 12*

■ A subscription-based search service for the **Internet** will compete with free search engines already available in cyberspace. *Page 14*

DESKTOP COMPUTING

■ As the **LAN server** increases its influence in corporate environments, the IS department is taking over purchase and support responsibilities from end-user groups. *Page 39*

WORKGROUP COMPUTING

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ENTERPRISE NETWORKING

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LARGE SYSTEMS

■ IBM's new mainframe implementation of the **Distributed Computing Environment** technology is missing some key pieces, but early users are looking at the glass as half full rather than half empty. *Page 87*

APPLICATION DEVELOPMENT

■ **New tools** are starting to fill the void of methodologies for developing client/server applications. *Page 95*

MANAGEMENT

■ IS managers must get involved early when faced with a **merger or acquisition** and know the full value of both IS departments. *Page 108*

MARKETPLACE

■ Although it's still not perfect, **fax software** is giving users more satisfaction. *Page 142*

COMMENTARY

■ The melding of PC and telephone is closer than ever, according to **Charles Babcock**. *Page 8*

■ **Bill Laberis** says Microsoft should consider some retrenching at this time rather than plunging headlong into new areas. *Page 36*

■ **James Ho** warns that failure awaits those who cannot link information technology to company operations. *Page 37*

■ Lists of best practices don't do the job in identifying successful companies, **Paul Strassmann** says. *Page 37*

CONSIDERING A JOB OVERSEAS? Michael Gentle, a project manager at SmithKline Beecham Pharmaceuticals in France, says learning the culture is more important than you think.

See Careers, page 129

How do you measure up?

How does your IS department compare with the Computerworld Premier 100? Fill out the Premier 100 survey, and we'll send you a free report showing how your operation compares with Premier 100 averages. Consolidated information from the surveys we collect may be published in a future Premier 100 issue. Send a request on company letterhead to Paul Gillin, Editor, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701 or E-mail to survey@cw.com.

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Executive Briefing

It takes a lot more than money to attract hotshots in distributed technologies with today's booming IS job market. Hiring top-notch people takes lots of money plus plenty of perks such as on-site day care, exercise facilities and a fully equipped home office. The reason is simple: **Demand for IS professionals** skilled in today's growth technologies far outstrips supply. *Page 1*

The red tape at the U.S. Agency for International Development could smother the most seasoned bureaucrat. However, the agency's management team is hacking away the regulatory mess, rolling ancient computer systems out the door and replacing them with new **client/server applications**. The AID's CIO has issued a tough mandate that the most important 13 of 28 new applications be operational by Oct. 1. *Page 1*

Amid much frustration cited by its Windows 95 independent software vendors, Microsoft had modified its logo certification program to ensure that developers provide a portfolio of Windows NT applications. *Page 1*. **Meanwhile, U.S. District Judge Stanley Sporkin** delves into the world of "vaporware" to see if Microsoft's preannouncement of new products is unfair. But industry executives say the government has no business policing software announcements. *Page 2*

Mainframe storage vendors are lining up to release RAID arrays in the third quarter, and as a result, users should be in a good position to reap price breaks. *Page 10*

Sexual comments and romantic chatter on the corporate E-mail network can lead to charges of sexual harassment. Experts advise having a corporate policy on E-mail content. *Page 12*

Some of the big names in fast food are on the comeback trail, counting on information technology to build customer loyalty and improve restaurant efficiencies. *Page 101*

On site this week: Facing an increasing workload in its commercial claims business, **Travelers Insurance Co.** has rolled out a workflow application that makes it easier for case managers to track claims and provide better customer service. *Page 74*. **Bear, Stearns** is leveraging a Unix GUI tool kit to ease application development for its programmers. *Page 95*

The 5th Wave *by* Rich Tennant

Industry debates U.S. vaporware probe

By Stuart J. Johnston and Mitch Betts

■ Judge Stanley Sporkin's freewheeling probe into the proposed Microsoft Corp. antitrust settlement has reignited a long-standing industry debate over whether "vaporware" announcements are unethical, illegal or perhaps inevitable.

Last month, the U.S. District Court jurist in Washington suggested barring Microsoft from making vaporware announcements because doing so can allegedly freeze the market and discourage buyers from purchasing competing products.

But a number of software industry executives and analysts interviewed last week disagreed, suggesting instead that the government stay out of the business of regulating software product announcements.

"I think we all need to grow up. The government is not going to save us. The way to compete with Microsoft is to build better products," said W. E. Peterson, chairman of Fitnesoft, Inc. in Orem, Utah, and a former executive vice president of WordPerfect, the Novell, Inc. Applications Group.

"It's a little bit like free speech. Where do you draw the line? It would be almost impossible to come up with a rule for that," said Mitchell Kertzman, chairman and chief executive officer of Powersoft Corp.

Actually, in 1990, a now-defunct group called the Software Business Practices Council gave it its best shot, recommending that product announcements occur just before customer beta testing. The council's chairman said the time between announcement and availability should be no more than nine months — a standard ignored ever since.

"Microsoft certainly didn't invent vaporware. They're simply following a hallowed tradition," said Amy Wohl, editor of the industry newsletter "Trendsletter" in Bala Cynwyd, Pa.

"It's extremely difficult to explain to people outside the industry [such as Judge Sporkin] that it's hard to predict how long it will take to develop a software product," Wohl added.

Alan Freedman, editor of the *Electronic Computer Glossary* in Point Pleasant, Pa., agreed. "Programmers are notorious for being terrible estimators of project time," he said.

However, he also said Microsoft may be exploiting the same "FUD factor" that IBM made famous in its heyday. Freedman defined the fear, uncertainty and doubt factor as "a marketing strategy used by a dominant or privileged organization that restrains competition by not revealing future plans." This is precisely Sporkin's point, but some of Microsoft's rivals were not concerned last week.

Several software executives said the practice of trying to fake out the market with product announcements is fairly common.

"I feel very sure there have been many times when Microsoft has announced products to freeze the market, [but] lots of companies have done that," Kertzman said.

Moreover, the media frenzy for product scoops combined with customer demands for advance notice actually puts great pressure on developers to preannounce, said vaporware watcher David Coursey, editor of the "PC Letter" newsletter in San Mateo, Calif.

Within antitrust laws

A court brief recently filed by several unnamed Microsoft rivals accused Microsoft of engaging in "predatory preannouncements" that stifle competition, a charge that Microsoft denies. To date, courts have ruled that preannouncements do not violate the antitrust laws unless they are knowingly false and have a market impact, the government maintained.

Doug Michels, executive vice president and chief technical officer at The Santa Cruz Operation in Santa Cruz, Calif., said the key ethics question is whether the announcement is based on naivete or is a "coldly calculated preannouncement" that misrepresents the situation in order to freeze the market.

IS shops not budgeting for Windows 95. See page 41.

What is vaporware?

"A term used sarcastically for promised software that misses its announced release date, usually by a considerable length of time." — *Microsoft Press Computer Dictionary* (1991)

"Slang for announced software that may never materialize." — *Computer Dictionary* (1992) by Donald D. Spencer

"A product that the vendor keeps promising is about to arrive 'real soon now,' but it goes so long past its shipment date that no one believes it will ever really ship." — *Jargon: An Informal Dictionary of Computer Terms* (1993) by Robin Williams and Steve Cummings

The four stages of software products

Concerned about vaporware, the now-defunct Software Business Practices Council set guidelines in 1990 recommending when products should be announced

Windows 95 will get DMI by fall

By Laura DiDio

In a move hailed by users as a time and money saver, Microsoft Corp. executives revealed last week that Windows 95 will support the Desktop Management Interface (DMI) by early fall.

"DMI support will be available in Windows 95 within 30 to 60 days after the operating system ships in August," said Jeff Thiel, a Windows 95 product manager in Microsoft's Personal Systems Division.

DMI is a standard specification under development by the Desktop Management Task Force. DMI support in the operating system will enable the next version of Microsoft's Systems Management Server to handle automatic software and hardware inventory and metering and automate software distribution.

Big payoff

Users who now install software packages manually were enthused by the potentially large cost savings in both dollars and labor.

Skip McDowell, an MIS engineer at Georgia Power Co. in Atlanta, said DMI support will significantly ease the burden of the 90 network administrators who manage 6,000 PCs in dozens of offices throughout Georgia (see box).

"Right now, hardware inventory is a never-ending process. And as far as software goes, we now pay for more licenses than we use, to ensure [license] compliance," McDowell said. He added that DMI support will save Georgia Power thousands of dollars and hundreds of hours of labor by allowing the utility to get a handle on every device and application in the organization automatically.

"It will also allow us to track every software package loaded on each desktop system. That capability alone will potentially save thousands of dollars because we can keep accurate records and buy exactly as many licenses as we need," he said.

Ki Wilson, senior microcomputer analyst at Stone Container Corp., a paper manufacturing company in Chicago, agreed, saying that automated software licensing, metering and asset management is crucial.

"It's a survival issue. Our network management resources are finite — we have just three network administrators. However, the demands on these three people are constantly growing," Wilson said.

Stone Container has 500 users at its headquarters, and each administrator is responsible for about 167 users.

"It consumes over one month of manpower hours, or $4,175, for each of them to install a single new application. Automatic software distribution will free up their time to do other things — like support the users," Wilson said.

Microsoft also plans to incorporate several other enhancements in Windows 95 when it ships this summer. They include the following:

- A scan disk facility that will check the integrity of the disk drive to increase system reliability. Scan disk will be designed to ensure that error and system failures do not occur.
- Automatic printer driver installation. Windows 95 will install the proper printer driver from the server to the workstation.
- Integrated communications capabilities to let users send and receive faxes from within Windows 95 and give them dial-in and dial-out network access.
- An upgraded terminal emulation file transfer facility — now called HyperTerminal from Hilgraeve, Inc. in Monroe, Mich. It will allow users to maintain many telephone numbers for automatic dialing.
- A so-called Uni-modem driver, implemented via the Telephony Application Programming Interface, that will support more than 250 modems.
- A faster batch install process for PCs with standardized configuration. This reduces the install process from the current 30 to 60 minutes to five to 10 minutes.

How Microsoft's Windows 95 is shaping up

Stage of release	Release date
First beta	June 1994
Second beta	October 1994
Third beta	March 1995
Preview	March 1995
Released to manufacturing	June 1995
Boxes on shelves	August 1995

Money in the bank

Georgia Power estimates that by enabling it to perform such tasks as automatic software distribution, DMI support can save each of the utility's 90 network administrators 67 hours — or about 1½ weeks of work to install a single application. At a rate of $25 per hour, that equals a cost savings of $1,675 for each network administrator and a total of $150,750.

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X.400 gains ground as messaging backbone

By Suruchi Mohan

After years of being the fond topic of academic and industry discussions, the X.400 messaging protocol is finally ready for prime time.

A report to be published shortly by The Radicati Group in Palo Alto, Calif., indicates that in the next 12 to 18 months, 40% of users who want a messaging backbone in their organizations will take the X.400 route. Of the 96 user organizations surveyed, only 17% said they would implement the now popular Simple Messaging Transport Protocol/Multipurpose Internet Mail Extension (SMTP/MIME) backbone.

"X.400 has become the lingua franca of what ties unlike mail systems together," said Tim Sloane, an analyst at Aberdeen Group in Boston. "It is very reliable," he said, adding that once administrators get over the complexity of implementation, "it runs."

What was the holdup?

X.400 has been a long time coming for a variety of reasons, the most practical being an insufficient number of products, said Colleen Longo, a senior systems manager at HealthNet in Woodland Hills, Calif., who is pilot testing X.400. "It's taking the vendors a long time to make sure their products can talk to X.400."

Moreover, Longo added, even the products that are supposed to be X.400-compliant do not work with one another.

"Implementation of X.400 in products is problematic," said one user at a large pharmaceutical company.

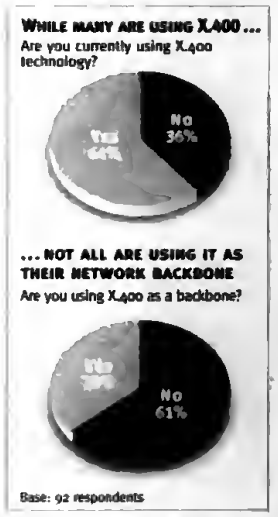
The user, who asked to remain anonymous, said at his firm, which has a partial X.400 backbone and is moving toward full-scale X.400, interoperability with proprietary systems is also an issue. Furthermore, the technology does not support directory synchronization.

"X.400 doesn't fix the directory issue," Sloane said. "If you have five mail systems feeding an X.400 backbone, you have five directories to synchronize; X.400 doesn't do it."

But that is changing now, said Sara Radicati, president of The Radicati Group and one of the authors of the study. Organizations investing in X.400 will ultimately implement X.500 too, thereby overcoming the directory problem in X.400. SMTP does not provide this option, she stressed.

Yet in some environments such as universities, SMTP is still the backbone of choice.

"We converged on SMTP about four years ago because in the university, we had a very heterogeneous environment of operating systems," said Jacob Levanon, senior technology manager at Indiana University in Bloomington. Each system supported proprietary mail, with SMTP as a common protocol among them. Further, he said about 30% of mail traffic to and from the university goes over the Internet, which has standardized on TCP/IP and its messaging protocol, SMTP.



And although a lot of companies are standardizing on TCP/IP as their transport protocol, they are ready to run X.400 over it instead of SMTP, Radicati said. "They consider MIME new, so [they] are not willing to put mission-critical applications on it," she added.

The cost factor

Also, running X.400 over TCP/IP has lowered the implementation cost of X.400, Sloane said. As defined initially, X.400 required the Open Systems Interconnect (OSI) transport, meaning users had to buy both the X.400 and the OSI stack software to connect two systems.

Also working in X.400's favor is its ability to move binary files among systems.

"The report shows the maturing of [X.400] technology," said Judy Rosall, another author of the study. The U.S. has trailed Europe in X.400 deployment, but as more mature and stable products come out, users will move toward an open systems backbone, Rosall said.

Digital to unveil high-end server

Springtime Alpha rollout to get leg up on 32-bit competitors

By Neal Weinberg

Digital Equipment Corp. plans to start at the top, with a high-end enterprise server leading the early April launch of its new product line based on the latest 64-bit Alpha chip.

Dubbed TurboLaser, the server features 12-way symmetrical multiprocessing and offers twice the performance of the DEC 7000 at about the same $125,000 starting price, according to Terry Shannon, an analyst at Illuminata in Hollis, N.H.

This spring, Digital will release two new workstations packing the 300-MHz EV-5 chip, which is capable of processing 1.2 billion instructions per second. And this summer, Digital will come out with a zippier version of its popular Alpha 2100 server as the company integrates the new chip through the Alpha family.

"We're looking forward to it," said Don Mills, vice president of engineering at Antologic, Inc. in Thousand Oaks, Calif. He said the faster machines will "make a significant difference in the performance of our software."

"There is a huge base of [VAX] 6000 customers out there waiting for the right product to move to," said Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass. "For large Digital customers who need the headroom of more than four processors, this might just open the floodgates."

But these days, marketing savvy may be more critical for Digital than speed, he added.

While the spring splash of products is aimed at putting more distance between Digital and its 32-bit competitors, Christiansen noted that the performance gap is actually narrowing as other companies compensate by clustering.

In addition, information systems managers are more concerned with application performance, systems and network management and "the overall cost concerned with how these things function in a distributed environment," Christiansen said.

On the high end, TurboLaser will compete against servers from Hewlett-Packard Co., Sun Microsystems, Inc. and AT&T Global Information Solutions.

Is it fast enough?

While some users are questioning why they need all that raw power, the University of Miami's School of Marine and Atmospheric Science is questioning if EV-5 is fast enough.

Peter Evans, a senior research associate, said he is torn between investing heavily in EV-5 or waiting another 18 months for EV-6, which could operate at 450 to 500 MHz.

He said the models coming out this year will offer a 50% jump in performance over his EV-4 processors.

Either way, Evans said his department is "fully committed" to the Alpha technology.

Michael Irwin, chief information officer at Guaranteed Overnight Delivery in Kearny, N.J., said his company switched to the Alpha line several months ago. "It's just tremendous, it's the fastest thing out there, and the reliability is great," Irwin said.

The two new workstations will be labeled AlphaStation 5/266 and 5/300 to reflect the EV-5 chip and the processor speed.

VAX users fly every which way. See page 90.

Apple sues Intel, Microsoft

By Mark Halper

With its future turning more than ever toward the graphics and multimedia market, Apple Computer, Inc. last week sued Intel Corp. and Microsoft Corp. in hall distribution of multimedia products that allegedly include Apple technology.

Apple claimed in U.S. District Court for the Northern District of California in San Jose that Intel and Microsoft infringed on Apple copyrights and misappropriated trade secrets.

The action centers on code from Apple's QuickTime video-enabling software, which Apple said Microsoft uses in its Video for Windows and Intel uses in its Display Control Interface (DCI). DCI is expected to be part of Microsoft's Windows 95 operating system.

Apple also said developers using those Intel and Microsoft products must sign an "amnesty agreement" with Apple to avoid action against them.

The legal action amended an earlier lawsuit Apple filed late last year against QuickTime co-developer San Francisco Canyon Co., alleging that Canyon had given QuickTime code to Intel, which in turn worked with Microsoft. Apple did not name Intel or Microsoft as co-defendants at that time.

An Intel spokesman said Intel plans to replace the code in question. Microsoft officials disputed Apple's assertions, claiming that none of San Francisco Canyon's code is in any version of Windows, including Windows 95.

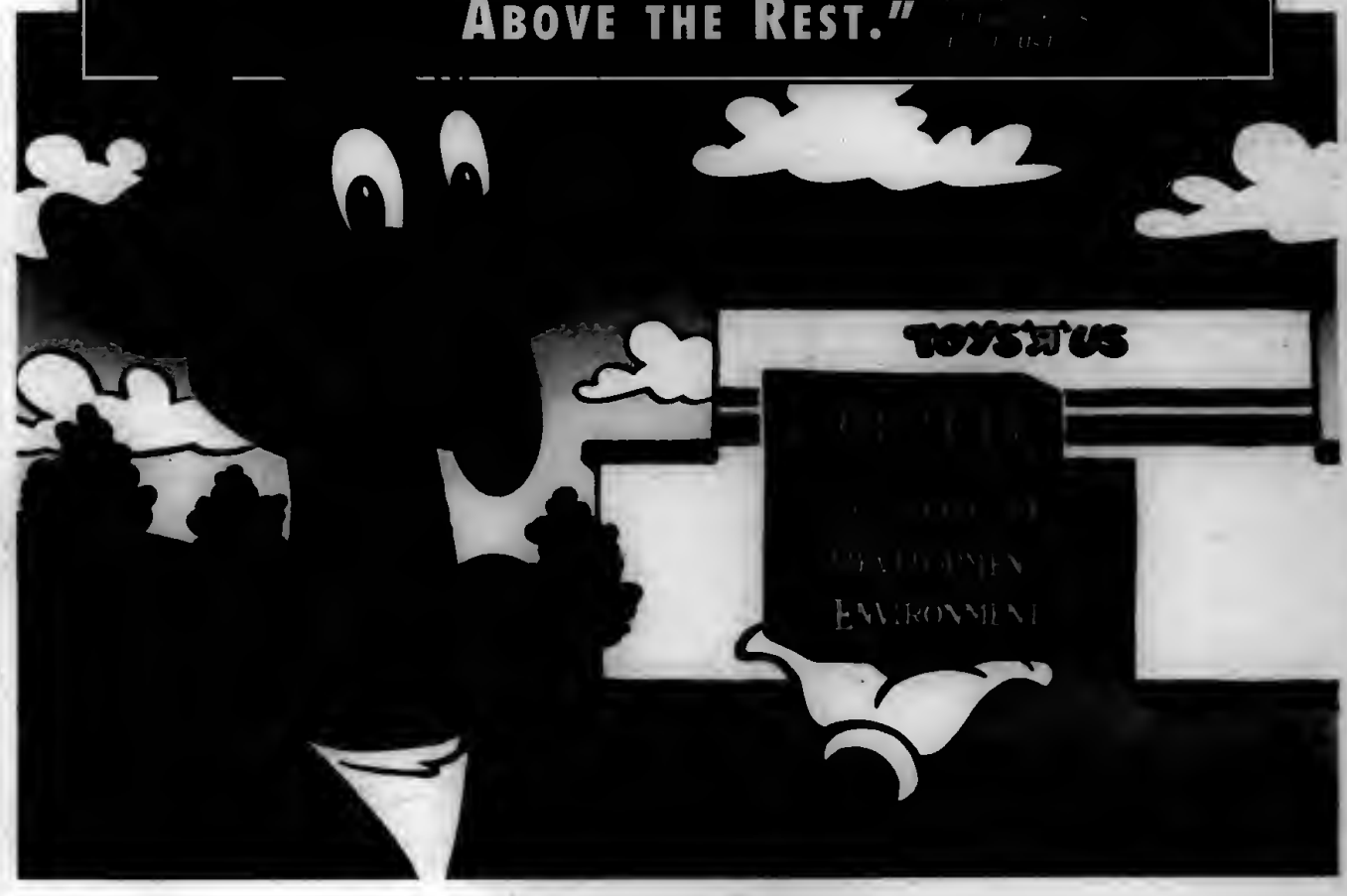
The suit comes as Apple rolls out a bevy of three-dimensional and full-motion video products.

"I would consider this protectionism and rightfully so," said Steve Linstead, a research scientist and Macintosh user at Johnson Controls, Inc. in Glendale, Wis. "Multimedia developers are on top of [Apple's] products like flies on paper, and now Microsoft could get its fingers into the market."

Bob Duffy, MIS manager at Cornish & Carey Residential Real Estate in Palo Alto, Calif., said Apple is trying to protect its lead in the multimedia area from the Intel/Microsoft hegemony. "I wish Apple luck, but I don't think they're going to get anywhere with it," Duffy said. "Technology seems to change hands readily these days."

Apple moves ahead with Open Transport release. See page 71.

"ORACLE CDE STOOD HEAD AND SHOULDERS ABOVE THE REST."



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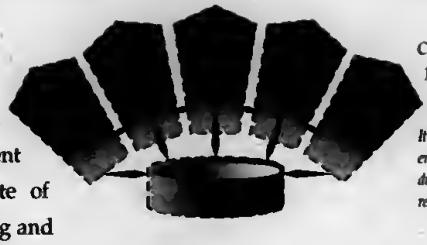
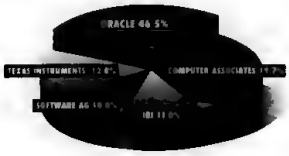


CDE's open, integrated solution for enterprise-wide client/server applications development covers the entire development cycle. It includes CASE, 4GL, 3GL and enduser tools in a repository-driven modular approach to reducing development time.



*Oracle sells more tools than any independent software company.**

©1994 Oracle Corp. *Source: IDC–Ranking of top 5 worldwide revenues for ISV 4GL and CASE vendors.

ORACLE

IBM downplays NT support plans

By Craig Stedman

IBM's newly integrated software group has not stopped sleeping with the enemy — otherwise known as Microsoft Corp.'s Windows NT. But it is becoming more selective in who it tells about the dalliance.

In the aftermath of a January reorganization that blended OS/2 and most of IBM's packaged software divisions into one unit, the computer giant has pulled back on plans to market NT versions of key system-level products. These include the CICS transaction monitor and DB2 database.

CICS for NT has been beta-tested and can be purchased, but at the eleventh hour IBM opted not to advertise that fact. Meanwhile, a spokesman for new software chief John M. Thompson said it has not been decided whether a promised NT version of DB2 will be marketed. The same applies to NT ports of other products, including the WorkGroup office suite, NetView network manager and MQSeries message-oriented middleware, he added.

Try, try again

The change of heart on NT comes as IBM is making what many analysts view as a last-gasp attempt to salvage OS/2 as a viable competitor to Microsoft's Windows juggernaut. NT is emerging as a strong competitor to OS/2 for distributed database and application server uses, users and analysts noted (see story page 39).

NT-related development work continues, and products will be made available for that and other non-IBM operating systems "as customers require it," the spokesman said. "But we're not leading with that. It's an accommodation strategy." IBM instead will emphasize OS/2 and its AIX Unix derivative.

However, customers at some mainframe shops that are installing or investigating NT said IBM could hurt its client/server image if it appears to be reticent about supporting operating systems other than its own.

Will they or won't they?

IBM had promised Windows NT versions of the following products:

Product	Time frame promised
DB2 database	March-April for beta testing
NetView network manager	Late summer 1995
WorkGroup office suite	Late 1995 or early 1996
VisualAge development tools	Schedule not disclosed

"It sounds like IBM is going to hold [NT products] in the bag until they're forced to take them out," noted Bill Mattox, a systems consultant at an international financial services firm on the West Coast that is starting to use NT as a departmental server.

Another user, who asked not to be named, echoed the notion that IBM's strategy could create the perception "that they're playing the big proprietary role again." The shyness about supporting NT looks like "another ploy to try to get the [user] community to use their products," he said.

"Everybody's got to strive to support the platforms that customers are using, and NT is certainly going to be a big player in the market," said Craig Goldman, chief information officer at The Chase Manhattan Bank NA in New York. NT could have "some real good uses" as a database server at the bank, Goldman added.

Still other users at IBM-oriented shops said the company's approach was fine by them. "Unless they've got demand, I don't see a need for them to put pressure on something like NT," said an executive at a major insurance company.

OS/2 had been expected to get a higher priority throughout IBM as part of the integrated software group [CW, Jan. 16]. Chet Geschickter, an analyst at Hurwitz Consulting Group, Inc. in Watertown, Mass., said Microsoft's delays on Windows 95 give IBM a fleeting chance to push OS/2 to customers who want a 32-bit operating system at both the desktop and server levels.

However, IBM will have to embrace NT as it becomes more widely used, Geschickter added. "They will be dragged into it by the marketplace," he said. "It's a tough world for IBM. They've got to compete with and support a competitor's platform at the same time."

Unix users gain high-speed host link

By Jean S. Bozman

■ IBM brought Unix users one step closer to mainframe data last week with a high-speed software connection called Clio.

Previously available by special customer request only, IBM's Clio links mainframe files stored on disk or tape to Unix workstations and IBM SP/2 servers at mainframe-channel speeds. Short for Client Input Output/Sockets, the Clio interface enables users to move files without converting data.

The news came as part of last week's wide-ranging IBM RS/6000 Unix workstation and server announcement (see story at right).

IBM intends to lighten the links between its worldwide installed base of 30,000 MVS mainframes, 350,000 RS/6000 workstations and servers and 300 IBM SP/2 Unix parallel processors. "We have more connectivity and integration software than anybody in the industry, including Hewlett-Packard," said Bill Filip, general manager of IBM's RS/6000 unit.

In a related Unix development, IBM outsourced development of the Common Desktop Environment (CDE) interface for AIX 3.2.5 to TriTeal Corp. in Carlsbad, Calif. While the TriTeal Enterprise Desktop (TED) product started shipping for AIX 3.2.5 in January, IBM itself is expected to release another CDE version for IBM AIX 4.1 later this year.

The Clio interface "isolates and buffers Unix users from needing to know that the server [they are connected to] is MVS," said Bob Colao, a senior programming manager for System/390 connectivity products in Kingston, N.Y.

New IBM products and pricing

RS/6000 3CT (desktop)	$38,795
RS/6000 39H (deskside)	$41,900
Xstation 160 (X terminal)	$4,949
HACMP/6000 Version 3.1.1 (for clustering SP/2 CPUs)	$8,000 per node
IBM 7331 (8mm tape library)	$10,325
IBM SP/2 Thin Node 2 (server)	$138,000

Clio translates IBM's proprietary EBCDIC data format to ASCII and pumps data to Unix disk drives at speeds of 4M bit/sec. or more. It works with relational and flat-file database information stored on the mainframe. Up to 14G bytes of data can be transferred to an SP/2 parallel processor.

Using Unix systems to access mainframe data is an appealing concept for many large organizations that have tried using PCs and mainframe database extracts to do the same thing.

Users can write Clio interfaces into their character-based Unix applications or access Clio's data pipelines from an Open Software Foundation Motif-like graphical user interface called InterMix, IBM said. InterMix supports on-line viewing of MVS files from Unix servers arranged under a Unix file system directory. InterMix costs $695; Clio's prices range from $20,000 to $70,000, with the option of a monthly fee.

Information Resources, Inc., a Chicago service company that analyzes grocery store sales data on mainframes, has been using Clio 1.2 for IBM's AIX Unix applications on an IBM RS/6000 Model 370 desktop for six months.

"We're at the point of moving some of our mainframe processing to the workstations, but the data is still on MVS," said software developer Michael Cittadino.

IBM's Bill Filip: *'More connectivity and integration software than anybody in the industry'*

Users look forward In Hewlett-Packard's HP/UX 10.0. See page 71.

Power rangers

IBM's wide-ranging RS/6000 line enhancement last week increased performance of the Unix systems by 15% to 40%. That includes enhanced high-end IBM SP2 Powerparallel servers, which now support up to eight clustered Unix CPUs.

IBM also introduced the IBM Xstation 160, its first product based on a PowerPC 603 RISC chip. Analysts said they expect the 603 chip to be used in IBM laptops and PCs because of its low-power and low-heat features.

By enhancing the Power2 chip — the workhorse of the RS/6000's largest uniprocessors — IBM may be buying time until PowerPC 604 chips arrive later this year and PowerPC 620s arrive in 1996. "The fact that there are midlife kickers with Power2 is interesting by itself," said Rich Partridge, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

Even so, Bill Filip, general manager of IBM's RS/6000 division, said users should expect further enhancements of the 67-MHz Power2 chip this year and next, especially for high-speed floating-point applications. Filip also said six- and eight-way versions of IBM's new PowerPC 601 Unix symmetrical multiprocessing machines would arrive by midyear, along with PowerPC 604 upgrades. — *Jean S. Bozman*

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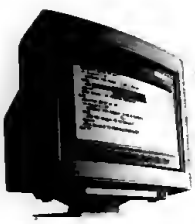

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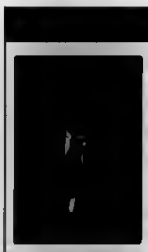
PCs will become telephone activists

The PC has been a great boon to individual productivity, but from its earliest days it has been handicapped by its inability to communicate with that other key business tool, the telephone.

You use both implements extensively, but it's still hard to get this fork and spoon combination to work together. Your telephone is connected to a network with an immense variety of switches, protocols and services, some of them digital and some of them analog. Your computer can't deal with this complexity except to treat it as a dumb data pipeline.

All of that is about to change. The PC is going to become an activist on the telephone network and bring intelligence to your clueless telephone handset.

Imagine a scenario in which the phone rings and your Windows screen pops up an identification of the caller and a set of push-button options to help you handle the call. Or picture turning on your PC and finding all your voice mail, E-mail and faxes stacked up in one queue.



The PC is going to become an activist on the telephone network and bring intelligence to your clueless telephone handset.

Charles Babcock

Caller ID was previously impossible on the single-user or small-business scale, even though large businesses have access to the service over their T1 lines. By mid-April of this year, competing telephone carriers must — by Federal Communications Commission order — exchange Caller ID information, which will make it available to anyone capable of devoting part of a PC to a call-control application.

"The PC is going to evolve into more and more of a communications portal," said Charles Fitzgerald, a product manager in Microsoft's digital office products group, in an interview at the Telephony Application Programming Interface (TAPI) Bake-off, an applications show held two weeks ago in Richardson, Texas.

This transformation will come about through two sets of contending APIs: TAPI from Microsoft/Intel and TSAPI (Telephony Services Application Programming Interface) from AT&T/Novell. Both are opening up the telephone system to the PC. Both also deal with telecommunications complexity through a set of service interfaces, while giving the PC application programmer another set of interfaces to which to write.

While the TAPI focus is a desktop-oriented, single-user approach, TSAPI takes a server approach that handles multiple desktops simultaneously. Both provide APIs for computer-based answering of calls, transferring calls, dialing preloaded numbers, etc. These call-control features are supplemented by an ability to issue commands to PBX switches, whose advanced features usually remain hidden from end users by a maze of directions and sequential button commands.

Although the TAPI and TSAPI approaches are different, many of the benefits they promise are similar. And there are now hundreds of programmers using the APIs to build new PC telephone applications, judging by the sample offered at the Intel/Microsoft-sponsored bake-off in Richardson. Caller ID, call waiting, voice mail, call forwarding, line switching and call notes are being brought down to the level of the individual PC.

Some developers, such as Stylus Innovation in Cambridge, Mass., want to provide custom controls for Microsoft's Visual Basic to enable the development of applications that can deliver voice responses to customer queries entered as number sequences. The most ambitious want to incorporate voice recognition.

Applications are being developed for both Windows 3.1 and Windows 95, which will have TAPI built into the operating system. PC-to-telephone applications will start appearing in numbers this year.

By 1996, your PC may provide you with services you assumed only your telephone company could offer.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

News Shorts

Antitrust suit targets Novell

Lantec, Inc. a Provo, Utah, maker of messaging system software, last week filed an antitrust suit against **Novell, Inc.** after Novell cancelled its contract with Lantec following Novell's merger with WordPerfect Corp. Lantec President Marcelo Thiollier "strongly believes that the PC industry is at risk if a company that controls a PC operating system is allowed to monopolize that operating system's software applications market." Novell denied the claims. "The suit has no merit," a Novell spokesman said. "Lantec owes Novell $3 million under the terms of a 1993 OEM agreement and one of their affiliate companies owes us $2 million. We don't believe there are any antitrust issues involved." Lantec also trained its sights on **Microsoft Corp.**, filing a Notice of Joinder opposing the proposed consent decree between Microsoft and the U.S. Department of Justice.

PowerPC heads for 100 MHz

Motorola, Inc. and IBM today will extend the PowerPC family of processors when they announce the PowerPC 603E, a 100-MHz, 32-bit extension of the 603 chip for portable computers. The new processor's on-chip 16K-byte instruction and data caches are twice the size of those in the original PowerPC 603. The new chip packs 2.6 million transistors and was designed using 0.5 micron technology.

FCC carves wireless spectrum

After four years of deliberation, the **Federal Communications Commission** freed up a hunk of spectrum for private sector use. This sets aside a piece of the nationwide airwaves that can be used to create wireless networks. **Compaq Computer Corp., Apple Computer, Inc.** and other computer makers are expected to pursue new markets by creating shrink-wrapped wireless networks. Products should appear on the market this year.

Andersen wins Foundation patent

Andersen Consulting in Chicago announced it received a U.S. patent for its Foundation for Cooperative Processing application development environment. The win comes on the heels of an announcement from **Seer Technologies, Inc.** in Cary, N.C., that it was granted a patent for its technology that handles the "design, implementation and maintenance of partitioned client/server software."

IBM extends AS/400 portability

IBM introduced a new version of its portable AS/400 system for use in application development as well as training and small business computing. The AS/400 Advanced Portable is scheduled to ship this week and is being marketed in four preloaded packages. Pricing starts at $10,100.

NexGen cuts Pentium prices

Intel Corp.'s recent price cuts were met with a quick response from chip clone maker **NexGen, Inc.** The Milpitas, Calif., company last week said it was slashing prices on its Pentium-class processors by up to 25%. Now, NexGen's clones will sell for 15% to 27% less than similar chips from Intel. For users, falling chip prices are expected to translate into lower system prices before the end of the month.

Sun boosts SPARCstation line

Sun Microsystems, Inc. boosted performance of its SPARCstation 20 workstations last week with the addition of 75-MHz SuperSPARC II chips. The Model 71 uniprocessor and dual-processor Model 712MP are priced at $17,995 and $25,295, respectively. There is a $9,000 chip upgrade kit for users' 50-MHz and 60-MHz SPARCstation 10s and 20s. Sun also introduced two MicroSPARC II units: the SPARCstation 4, a $3,995 replacement for the 2-year-old SPARCclassic workstation, and the $2,395 SPARC Xterminal 1, a follow-up to Sun's first X Window System terminal. All the units shipped last week, Sun said.

AT&T launches Euro-venture

AT&T Corp. and **Unisource** announced a new company combining their data and voice businesses in Europe. The joint venture, with assets of approximately $200 million and more than 2,000 employees, is expected to be fully operational by midyear. Unisource will own 60%, AT&T 40%.

Transarc plans Encina for NT

Transarc Corp. in Pittsburgh last week introduced Encina for NT, which extends some capabilities of Transarc's Distributed Computing Environment (DCE)-based Encina online transaction processing applications to **Microsoft Corp.** Windows NT servers and clients. Encina for NT will ship in the third quarter. Transarc will also offer this year a lightweight client capable of running DCE and Encina services first on Windows and later on Windows 95, personal digital assistants and Macintoshes. Pricing was not disclosed.

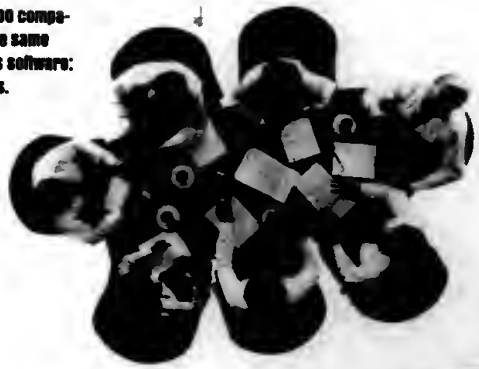
'net package gains security

Spry, Inc. in Seattle last week released what it said is the first Secure-HyperText Transfer Protocol (S-HTTP) server. The SafetyWeb server software uses nonproprietary public key encryption. The system is an implementation of the secure HTTP CERN Web server. CERN is the Swiss organization that developed the World-Wide Web. Dun & Bradstreet Information Services is reportedly testing a beta version of SafetyWeb.

Chipcom strong in fourth quarter

Hub maker Chipcom Corp. in Southboro, Mass., announced earnings of $18.8 million for 1994, a 50% increase from 1993. It also extended its reseller agreement under which IBM will offer Chipcom's Onsemble stackable hub line and Galactica enterprise Ethernet switching hub. Chipcom will resell IBM's 8230 Token Ring stackable hubs and 8272 Token Ring switch.

98% of the Fortune 500 companies have reached the same decision on business software: Computer Associates.



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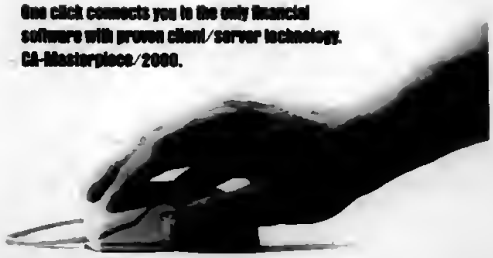

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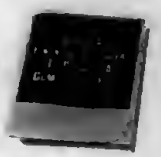

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Storage vendors offer crop of RAID arrays

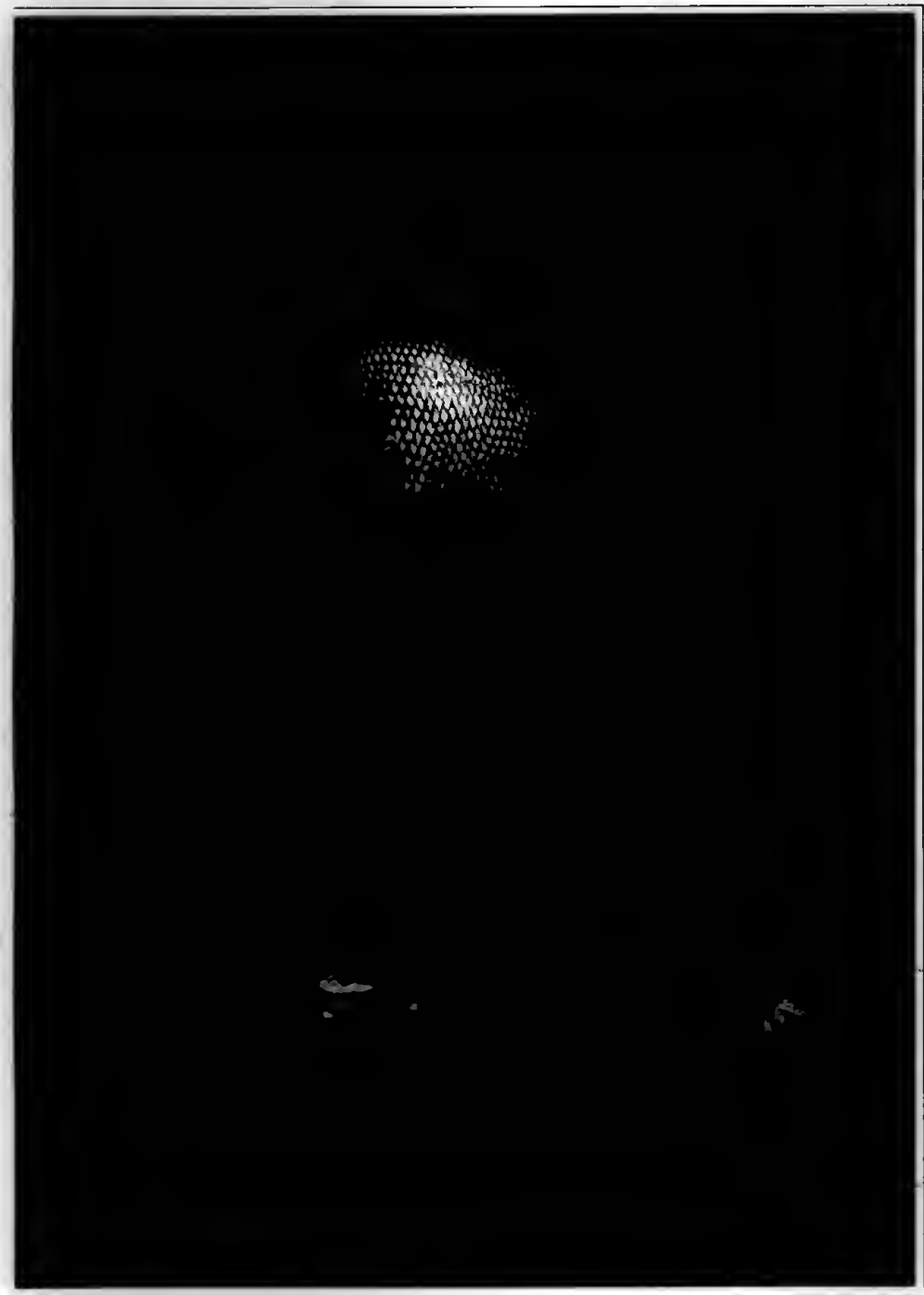
By Craig Stedman

It may be midwinter on the calendar, hut spring has come to the mainframe disk storage market.

RAID arrays are hursting out all over, putting users in a good position to reap price breaks when the products are ready to harvest this summer.

Hitachi Data Systems Corp. last week introduced a RAID Level 5 subsystem with a 724G-byte capacity, promising volume shipments in the third quarter. Meanwhile, Storage Technology Corp. said it plans to ship n 1.3T-byte RAID box in the second half of the year as a more general-purpose alternative to its Iceberg 9200 array.

The frenzy of activity will continue this week when Encore Computer Corp. takes the wraps off a 450G-byte array that will be resold hy Amdahl Corp. Encore is shipping the device immediately, but analysts said tbey expect Amdahl to wait until additional features become available around midyear. Amdahl declined to comment on its plans.



EMC Corp. recently confirmed its plans to ship an array based on RAID Level 4 in the third quarter. IBM is also expected to have a second-generation version of its Ramac suhsystem ready by then. The prospect of all those products hitting the market at roughly the same time has mainframe customers ruhhing their hands in anticipatinn of cutthroat price competition.

"That's certainly what we're hoping for," said Erik Jensen, vice president of computer operations in the information systems unit at First Security Corp. in Salt Lake City. First Security currently uses HDS's disk suhsystems and is interested in the promised 7700 RAID box. But it will also look at Ramac and Iceberg for a storage purchase planned for the third quarter, Jensen added.

RAID parade

The RAID subsystems introduced by Hitachi Data Systems and Encore include the following features:

	HDS' 7700	Encore's Infinity SP30
Disk capacity	23G bytes to 724G bytes	48G bytes to 450G bytes
Maximum cache	8G bytes	4G bytes
RAID levels supported	5	0, 1 and 5
Interconnect	Escon	SCSI; Escon available Q2

There are "an awful lnt of [vendors] chasing the same market, and the fight for shelf space is going to be interesting," said Thnmas Loane, vice president of computers and communications services at Alamo Rent A Car, inc. in Fort Lauderdale, Fla. Loane said he hopes to see RAID prices reach $2 per megahyte by year's end — down from the current range of $3 to $4 per megabyte.

Mike Saunders, director of market planning at StorageTek, said that the price "erosion curve scares the hell out of everybody" on the vendor side. "I dnn't think we're nnder any illusion thnt the curve is going to get less steep," he said.

HDS drew praise from analysts fnr the technical promise of its 7700 RAID nffering, which is supposed to perform in the same rarefied reaches as EMC's hot-selling Symmetrix arrays. The 3½-inch drives in the 7700 are rated for the same reliability as larger traditional mainframe disks, and HDS said all components as well as the controller microcode can be changed on the fly.

Encore's Infinity SP30 supports multiple RAID levels in a single box, and its capacity can be split at the drive level between mainframe and Unix hosts. Support for sharing tbe same data between mainframes and Unix systems should be added this summer, said Kenneth Fisher, Encore's chief executive officer.

The array will be marketed by about 20 distrihutors for now, hut it "is not going to be a hig hitter until Amdahl bellies np to the bar," said Carl Greiner, an analyst at Meta Group, inc. in Stamford, Conn.

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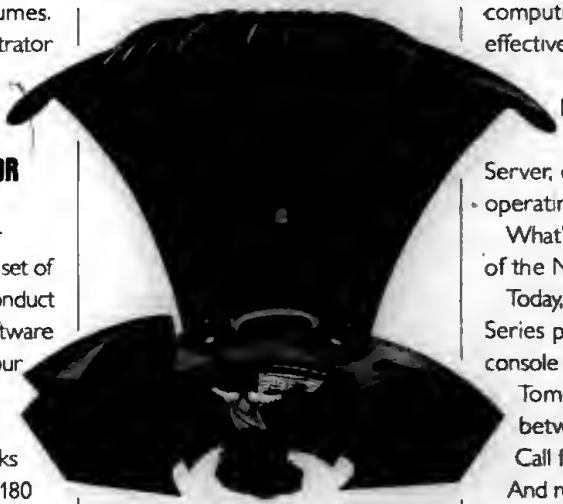

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IS policies target E-mail harassment

By Mitch Betts and Joseph Maglitta

As office chatter moves from the water-cooler to electronic mail, information systems departments have something new to worry about. Romantic banter, jokes and sexual comments on the corporate E-mail network can lead to serious charges of sexual harassment.

Just last week, the IS department at Hallmark Cards, Inc. in Kansas City, Mo., completed a new E-mail usage policy that mentions the threat of lawsuits and warns users not to engage in gossip, personal attacks or remarks that could be construed as sexual harassment.

Send a card instead

HALLMARK'S NEW E-MAIL USAGE POLICY PROHIBITS THE FOLLOWING:

- **GOSSIP**, personal information about yourself or someone else or emotional responses to business memos
- **INSENSITIVE LANGUAGE**, derogatory, offensive or insulting remarks
- **HARRASSMENT** of others, including sexual harassment or any remarks that may be misinterpreted as such

Source: Hallmark Cards, Inc., Kansas City, Mo.

Harassment is the No. 1 E-mail abuse at Rochester, N.Y.-based Eastman Kodak Co., said Robert L. Mirguet, information security manager. "People are much more threatening in E-mail notes" than face-to-face, he said at a recent conference. Mirguet said E-mail abuses are still rare, but they have included sexual harassment, nasty messages related to pending divorces and "love triangles."

Many cases of electronic harassment are resolved by out-of-court settlements or corporate disciplinary actions, but last month, the issue spilled over into open court. A division of Calsonic International, Inc. in Shelbyville, Tenn., was slapped with a $2.5 million sexual harassment lawsuit by a woman alleging, among other things, that her male supervisor frequently made lewd remarks to her via company E-mail.

The 32-year-old woman, Pamper Barber, charged that her supervisor's actions included unwanted physical contact, remarks about her body and "aggressive insistence" that she visit his hotel room on a business trip, according to the lawsuit filed in Bedford County, Tenn. An attorney for Calsonic, an auto parts maker, could not be reached for comment.

E-mail policy a must

Not surprisingly, experts recommend companies have a policy on E-mail content, both for its educational value and to partially shield them from legal liability.

That means employers should ban electronic valentines and any mention of physique, race, sex or disabilities on the corporate E-mail network, said Elizabeth Fried, a human resources consultant in Columbus, Ohio. "Those with romance on their minds may not realize that network chatter about the 'babe on the second floor' or the 'hunk in the mail room' can come back to haunt them."

"I expect to see more and more discovery of E-mail" as plaintiffs' attorneys seek evidence of sexual harassment, predicted attorney Thomas Sipkins, a partner at Popham Haik Schnobrich & Kaufman in Minneapolis.

Jim Coil, senior partner at Kilpatrick & Cody in Atlanta, said he has had four cases in which workplace E-mail was one of the methods used by the alleged harasser. But the cases are often settled quickly, he added, because the E-mail printouts and archives provide hard proof. "E-mail is not the appropriate medium if you're going to be a harasser," he said, "unless you're very, very dumb."

On-line harassment

The problem of sexual harassment also crops up on the Internet and on-line services. A 1993 survey of 500 members of Systers, an electronic network for women in computing, found 20% had experienced what they considered sexual harassment on-line. That figure is about the same as results from sexual harassment surveys in general, but "because it's a different medium, [on-line harassment] is creepy in a different kind of way," said Sandra Borg, director of the Palo Alto, Calif.-based Systers network.

A 40-year-old university librarian in California said she received more than a dozen threatening and obscene Internet messages from a former employee she had fired. One death threat was signed "Hannibal Lecter," the name of the serial killer in the film *Silence of the Lambs*.

Several observers said the emergence of E-mail harassment was inevitable.

"Whether harassment exists on the phone, in bars or walking down the street in certain neighborhoods, it's just a fact of human existence," said Nancy Rhine, director of Women's Wire, a computer network in San Francisco. "Anybody who thinks it wouldn't happen on-line is wrong."

Cyber-stalking

At some point, Andrew C. Archambeau's E-mail messages to a woman he once dated allegedly went beyond romantic and took on a threatening tone. Perhaps it was when he reportedly wrote: "This letter is the *least* of the many things I could do to annoy you."

Shortly thereafter, Archambeau was charged with violating Michigan's antistalking law. His defense attorney argued that the law is unconstitutional, overbroad and vague. Ironically, a state court hearing on what may be the first case of "cyber-stalking" is scheduled for Feb. 14, Valentine's Day. —*Mitch Betts*

Andrew C. Archambeau *was charged with stalking via E-mail under Michigan law*

GroupWise users to hear messages soon

By Suruchi Moban

On the heels of a similar announcement made by Lotus Development Corp. and AT&T Corp., Novell, Inc. last week announced it has integrated voice messaging into GroupWise.

With the help of this technology, GroupWise users will be able to dial in to a Telephone Access Server (TAS) to pick up their voice mail and electronic-mail messages as well as respond to voice mail messages from their PC or laptop.

Lotus and AT&T, which made their technology announcement at last month's Lotusphere, are taking a different approach to integrated voice messaging than Novell. Although both technologies will enable users to see voice, E-mail and fax messages on their desktops, the two are substantially different on the back end.

Provo, Utah-based Novell's voice messaging technology supports the Simplified Message Desk Interface (SMDI), a telecommunications standard that gives information about an incoming call to a hardware device such as a telephone. SMDI is supported by a majority of private branch exchange (PBX) vendors, such as AT&T, Northern Telecom, Inc. and Rolm Mitel Corp.

Novell's voice messaging system requires a PBX; a voice bridge from Voice Technologies Group, Inc. in Buffalo, N.Y., that converts PBX calls to SMDI; and a GroupWise TAS, which routes messages to the appropriate file server. TAS costs $9,995. All messages are stored in the GroupWise server; the voice messages are saved as .WAV files, a multimedia standard for storing sound in PCs.

Although Novell touts its PBX vendor independence as a big selling point for its technology, Robert Mirani, a senior telecommunications analyst at The Yankee Group in Boston, said that while giving users more latitude in choosing a PBX vendor is good, supporting so many vendors may be a tall order.

Lotus is also offering integrated messaging with the help of AT&T, but it is not putting voice and data in the same server like Novell is. Voice messages and text messages are stored separately, the former on AT&T's intuity Audix server and the latter on the Lotus' Notes or CC:Mail server.

The servers are synchronized with the help of a software component, called the Synchronizer, said Peter Klante, a marketing director at Cambridge, Mass.-based Lotus. This lets users dial in to voice mail, have their E-mail messages read to them and see (and hear) voice mail in their messaging mailbox.

Push me, pull you

Selling an integrated voice mail and E-mail product will be difficult because it involves both the telecommunications and the data communications side of the house, according to Robert Mirani, a senior telecommunications analyst at The Yankee Group. The two sides have traditionally been at loggerheads.

But with Novell's approach, users do not need the voice mail server, which can cost more than $10,000. The advantage to Lotus' approach, Klante said, is that it allows companies to protect their existing investment in voice-mail systems. If, however, a company is starting with a clean sheet, Novell's product might make more sense, he added.

Unlike Novell, which will provide only GroupWise application programming interfaces (API), Lotus and AT&T will provide developers with the Common Messaging Call APIs to which they can write their applications. In this sense, the Lotus/AT&T technology will be more open, although it will tie users to one telecommunications vendor. Novell offers users a wider variety of PBX vendors. Both products are slated to be available in the second half of this year.

Collabra adopts client/server in its Share 2.0. See page 72.

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InfoSeek eases 'net searches

By Ellis Booker

Why is finding something on the Internet harder than looking for a needle in a haystack? Because haystacks do not grow 26% every few months.

And as any veteran cybersurfer will tell you, finding what you want means combing through tons of fascinating but often distracting bits of news, information and trivia.

To tackle this problem, InfoSeek Corp. this week will launch InfoSeek Search — an on-line, subscription-based service that lets users search the entire Internet, including the more than 10,000 Usenet newsgroups.

The InfoSeek database contains more than 2 million articles and is, according to its creators, the largest single collection of searchable information about the Internet and computer-related topics.

"The service has been available since Dec. 16, but it's been a well-kept secret," said Steven T. Kirsch, founder and president of the year-old Santa Clara, Calif., start-up. Kirsch is also founder and former president of Frame Technology Corp. in San Jose, Calif.

Kirsch said he expects users will pay the $9.95 per-month subscription fee because his service will be dependable and is the only one to expand the scope of searches to commercial databases and Usenet.

World-Wide search

The World-Wide Web-based service, which must be accessed via a graphical Internet browser such as Mosaic, sits at InfoSeek's headquarters on a Sun Microsystems, Inc. SPARCserver 1000 server.

Along with Web and Usenet searches, InfoSeek checks databases provided by a handful of commercial providers such as Business Wire, CW Publishing, Inc., Newsbytes News Network and PR Newswire. Kirsch has signed up 13 of these content providers so far and expects to double that number within six months.

Content providers are paid a royalty and a percentage of InfoSeek's income, with a guaranteed minimum. Getting content providers to accept this pricing model may be tricky, however, analysts said.

"They have to convince [them] of the value of volume pricing," said Michael Goulde, a senior consultant at Patricia Seybold Group in Boston. Driving down the price of information is critical, he added, because traditional Internet surfers are used to getting their information and searches for free.

Popular free search engines on the Internet include Lycos (http://lycos.cs.cmu.edu), maintained by Carnegie Mellon University in Pittsburgh, and WebCrawler (http://webcrawler.cs.washington.edu/WebCrawler/Home.html), maintained by Washington University.

Individual subscriptions to InfoSeek cost $9.95 per month and include 100 queries and articles retrievals. Additional queries and retrievals of public documents cost 10 cents each. Retrievals from commercial collections range in price from 5 cents to $5.

Hearts afire

CONTINUED FROM COVER 1

tually be sold. Merchants with on-line connections — either through public data networks such as CompuServe and America Online or the Internet — generally concede they are not yet doing a big business with cybershoppers.

Ready for launch

But the mechanisms to support electronic commerce are being developed at a blazing pace.

For example, take PC Flowers in Stamford, Conn., which expanded its service to the Internet last December. The florist is set to launch what it claims is a first-of-its-kind approach to cross-marketing in cyberspace.

"We'll be able to track where people are coming from and give these [other sites] a percentage of the sale," PC Flowers' President William Tobin said last week. On-line shoppers will be offered special flower deals if they enter the PC Gifts & Flowers home page (http://www.pcgifts.ibm.com) from these designated sites.

Tobin said he had negotiated contracts with two popular Internet sites. Time Warner, Inc.'s Pathfinder (http://www.timeinc.com/pathfinder/hotpage.html) and Mecklermedia Corp.'s MecklerWeb (http://www.mecklerweb.com/). Tobin said he is also negotiating deals with other Internet and public data network providers.

"We're using *Internet World* magazine to direct readers to the Internet Mall on MecklerWeb," said Paul Bonington, publisher of MecklerWeb and *Internet World* in Westport, Conn. Bonington would not disclose the details of his group's contractual arrangement with PC Flowers but said it is a small percentage of each order.

The "electronic token" service being used by PC Flowers was developed by IBM's Integrated Systems Solutions Corp. IBM Electronic Market Services launched PC Gifts & Flowers last December in IBM's first electronic commerce pilot program. While logging the origin of traffic is not new, paying the originator for these hand-offs is a new twist, Internet watchers said.

Katherine Acosta

"Cross-promoting on the Internet is the way to go, and we'll see more of it," said Jayne Levin, editor in chief of "The Internet Letter," a newsletter in Washington. "Getting paid is the name of the game."

Cupid, draw back your bow

Other Valentine's Day Web sites that have felt Cupid's sting include the following:

- Cupid's Cove. One of the best designed sites, it offers everything from a kissing booth (with audio) to Valentine's Day cards and recipes (http://www.neosoft.com/citylink).
- The Cyrano Server. This Web page writes love letters for you (http://www.nando.net).
- Godiva, the queen of confectioners, added a Valentine's Day page to its Web site (http://www.godiva.com/catalog/valentine.html).
- Four11. This searchable E-mail system, launched last October, just might be helpful in locating a lost love. The resource contains more than 500,000 names and has 25,000 registered users, who pay a $20 yearly membership and are given more extensive searching tools (http://www.Four11.com/).

Spy looks to put the Internet in every pot. See page 78.

Looking for love

America Online subscriber Sally, a recently divorced, 41-year-old mother of two in Nashville, is a fan of finding friends and lovers on-line.

"If you're bored, the kids are in bed, and you want to talk to people, it's great," she said. "Gosh, who wants to go to bars these days?"

Sally (not her real name) has had two in-person relationships with men she met through the America Online chat rooms, and she counts many others as on-line friends. Interactive chat, where users assume screen names and type messages back and forth, is one of the most popular services of all on-line networks.

Still, Sally wants to be clear on one point: "Can it be better in person? You bet. Nothing beats the real thing."

Yet contrary to the stereotype, relationships that begin on-line end up about as successfully as conventional relationships, said Steven Baumrucker, an M.D. in Rogersville, Tenn., and a faculty member at ETS College of Medicine in Tri-Cities, Tenn.

But the doctor's survey of 150 Internet and America Online users last year did find an interesting difference: On-line lovers tend to commit faster. He should know. Baumrucker, who is working on a book entitled *Love at First Byte*, met his wife on-line in 1989. — *Ellis Booker*

IBM Link

CONTINUED FROM COVER 1

gust. In contrast, Link will work with any graphical Internet browser, IBM officials said. Based on the SNA protocol and IBM's Advantis network, Link is now used by IBM customers, trading partners and software vendors. It has more than 40,000 non-IBM users.

"We did market research with 400 customers and 115 business partners," said Willis Johnson, business area leader for IBM Link in Atlanta.

Although Internet connectivity was demanded by fewer than half of the customers and business partners surveyed, "we have a very large user base, and we saw an opportunity to exploit the Internet," Johnson explained.

"The Internet is currently experiencing growth driven by the World-Wide Web," said Jay Batson, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "But the Internet is capable of running any TCP/IP application — new applications that are not necessarily Web-based."

He said companies such as IBM that have traditionally provided proprietary networks might use the "utility" transport of the Internet for value-added applications and services.

The pending IBM announcement will be the first of a phased plan to bring Link to the Internet, Johnson said.

In this first phase, IBM will announce the availability of the public environment containing company and product information from IBM. It will be open to anyone on the Internet. Later in the year, IBM will offer various restricted areas that will require a password. Some of these services will be free, some will be fee-based, and some will be "entitled" — available to purchasers of hardware and software.

IBM said it also plans to distribute an IBM-authored security and encryption tool for the network that will work with any graphical Internet browser.

IBM is negotiating with a number of software companies to join the network, but the names of these partners were unavailable last week.

C++ updates to grab show spotlight

By Elizabeth Heichler

■ As industry watchers predict gains in the popularity of the C++ programming language among software developers, tool makers are lining up to unveil major products at next week's Software Development '95 conference.

"We're seeing increased use of C++ in nur client base," said Adrian Bowles, president of Westport, Conn.-based Atelier Researcb, which provides consulting services to Fortune 100 companies. "There's a fair amount of application development in C++, and we're seeing it for just about everything from distributed real-time financial systems to mundane back-office applications."

"C++, Smalltalk and object technology are really starting to expand and are going to have a great '95," said Hugh Bishop, manager of emerging technologies research at Aberdeen Group in Boston. According to Bishop, Microsoft Corp. and Borland International, Inc. lead the C++ market with their desktop tools for PC environments, while CenterLine Software, Inc., SunSoft, Inc. and Hewlett-Packard Co. dominate the Unix development environment.

Upping the competition

Two companies are preparing to challenge this pecking order during the conference at San Francisco's Moscone Center. Symantec Corp. and TakeFive Software, Inc. will roll out major updates of their C++ tools for the desktop and Unix environments, respectively.

Symantec C++ 7.0, due out next month, will include an object-oriented browser and editor as well as a network build tool that shortens build time by distributing tasks across multiple systems on a network, said Gene Wang, vice president of applications and development tools at the Cupertino, Calif., company.

The new release, which is aimed at developers migrating from 16- to 32-bit programming, also provides 32-bit support for the beta release of Microsoft's forthcoming Windows 95 operating system. It will ship with Microsoft Foundation Class Library 3.0. The suggested retail price will be $199, with upgrades available for $99.95, Wang said.

Separately, TakeFive will unveil the second major release of its Sniff+ Unix C and C++ development tools.

Based in Salzburg, Austria, TakeFive is marketing a tool set developed at Union Bank of Switzerland. To date, its highest-profile customer bas been Taligent, inc., which is bundling Sniff+ 1.0 in the beta release of its CommonPoint application system. A Taligent spokesman confirmed that a similar deal for Sniff+ 2.0 will be made, contingent on its meeting Taligent's criteria for performance.

Sniff+ 2.0 includes an open interface for configuration management systems — welcome news fnr Sniff+ customer Karl Pingle, a member of the technical staff at Acuson, Inc., a medical imaging equipment maker in Mountain View, Calif. "It appears we could now interface our configuration management tool to it or tn any configuration management tool we want," he said.

Sniff+ 2.0 is available and costs $2,990 for a single floating license, according to TakeFive representatives.

Market leader Microsoft will not be standing idly by at the conference either. The software giant is bringing out the first edition in its new subscription release program for Visual C++.

Tools are appearing to help developers adopt client/server methodologies. See page 95.

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Compaq pushes server power down to low end

By Jaikumar Vijayan

At Compaq Computer Corp., the high end will drift just a bit downstream today.

Houston-based Compaq is introducing two servers packed with capabilities that until now were found mainly in its high-end ProLiant 2000 and ProLiant 4000 boxes. Analysts said they perceive the move as an attempt by the company to deliver high-end dependability features at mainstream low-end prices.

The ProSignia 300 and dual-processor-capable ProLiant 1500 servers are based on Intel Corp. 75-MHz and 90-MHz Pentium chips. Both boxes feature Error Checking and Correcting (ECC) memory, drive-array fault management, automatic server recovery and redundant power supplies.

The systems are based on Compaq's TriFlex/Peripheral Component Interconnect (PCI) architecture and feature integrated network management and installation software.

The ProSignia 300 will start at less than $3,200, and the ProLiant 1500 will have a starting sticker price of just more than $6,000.

The ProLiant 1500 will replace Compaq's ProLiant 1000 server at the low end of the ProLiant family of high-performance servers. The ProSignia 300 model is being positioned between the ProSignia VS and ProSignia 500 models.

Compaq is not only offering more bang for the buck, said Nathan Nuttal, an analyst at BIS Strategic Decisions in Norwell, Mass., but it has "focused on the manageability of the hardware."

The Compaq introductions could be a precursor to similar announcements from other companies this quarter, particularly IBM, analysts said.

For example, NetFrame, Inc., a Milpitas, Calif., superserver vendor, is already preparing to announce a family of midrange servers that will cost substantially less than the company's current models and offer high-end features including high-performance tape backup and retrieval.

"I think Compaq has been particularly responsive to the needs of the high-end server market. It's good to see them introduce some high-end features in the low end too" because it makes the server offerings more comprehensive, said Douglas Murphy, director of management information systems at Comcast Corp. in Philadelphia.

According to Murphy, features that have made Compaq systems popular at the high end — PCI buses, ECC memory, redundant power supplies and server management tools — would also add muscle to the low end.

Hardware snapshot

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Desktop 911

Compaq offers disaster recovery services with Comdisco, Inc., including the following:

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A Mobile Cluster Bundle can be shipped within 24 hours of a declared disaster to a customer location.

An Emergency Response Bundle offers access to a Comdisco recovery site with a full voice and data communications infrastructure.

Teamwork talent

On the client side of the house, Compaq last week announced that it is teaming with Connor Peripherals, Inc. in San Jose, Calif., Quantum Corp. in Milpitas, Calif., and Seagate Technology, Inc. in Scotts Valley, Calif., to develop an advanced-drive diagnostics specification.

Software based on the specification will add diagnostics to hard drives used in PCs, allowing hard drives to predict and alert customers to certain types of failures, according to Compaq. It is slated to be available later this year.

McCaw program aids CDPD development

By Michael Fitzgerald

AT&T Corp.'s McCaw Cellular Communications, Inc. last week became the latest vendor to implement a developer's program for Cellular Digital Packet Data (CDPD).

While CDPD-capable applications are available — despite the lack of a fully operational network — observers say the developer programs should prompt the arrival of more turnkey applications this year. These will be aimed largely at regional customers such as public safety departments or real estate agents. Corporate developers could also use the programs for informal crash courses in CDPD development.

Analysts said the developer programs are positive for users interested in the still-developing CDPD protocol because they bring together vendors from the carrier, application development, hardware and peripheral sides of the business.

One participant who is in several of the programs agreed.

"It gives us cross-pollination" with vendors from other slices of the CDPD world, said Tom Doyle, director of business development at Software Corporation of America, a middleware and application vendor in Stamford, Conn. "What you're finding in CDPD is that you need to involve a few different entities: software makers, carriers, hardware vendors and systems integrators," he said.

Developer programs offered

Bell Atlantic Mobile's Greenhouse program was the first developer program to be announced publicly late last year, but Ameritech Cellular Services and GTE Corp.'s Personal Communications Services unit are among those also offering developer programs.

The programs "provide all the pieces of the network the developer can't afford" to buy such as the services and devices, said Iain Gillot, an analyst at Link Resources Corp. in Framingham, Mass.

Gillot said tools such as the new Ubiquity Software Developers Kit from Pacific Sciences Communications, Inc. in San Diego will also help. The kit simulates the CDPD network to help developers test applications, even though the network itself is far from complete.

Allison Koenig, manager of independent software vendor strategic relations at McCaw's Wireless Data Division, said McCaw's program was not targeted at user corporations. But because the company has received so much interest from users, it is looking to incorporate them into its program, she said.

Much ado

CONTINUED FROM COVER 1

ferings after Windows 95 ships. Even Microsoft officials, who have prodded users and developers to devote their efforts to the 32-bit Windows environment, last week said they cannot rule out another round of 16-bit Windows applications.

Nor can users.

"We will continue to use and buy 16-bit applications," said Timothy Grau, data manager at LTV Steel Co. in Cleveland. "We won't upgrade to Windows 95 for the sake of upgrading."

"I just wish they'd get off their butts and get the dang thing out here," said Don Knapp, PC support director at Aladan Corp. in Dothan, Ala. Knapp plans to run a mixed environment of Windows 3.1 and Windows 95.

The licensing extension from Microsoft takes place at a key juncture for both the development community and users.

In an effort to ensure it can offer the same applications on Windows NT — which is used mostly as a workstation platform — and Windows 95, Microsoft has required developers to make their Windows 95 applications compatible with NT. But that requirement is straining vendors' resources, developers confirmed last week.

Microsoft has also mandated that vendors deliver their NT-compatible Windows 95 applications within 90 days of the operating system's shipment. Developers said this demand is onerous because Microsoft cannot say with certainty when it will ship Windows 95, although August is the latest official promise for availability.

"Customers are starting to say to us, 'How can we believe your delivery dates when nobody is sure when Microsoft will even ship it?'" said one developer who asked to remain anonymous.

The bottom line for users is that the additional resources vendors have to pour into making their Windows 95 applications compatible with NT are a drag on the vendors' ability to deliver Windows 95 applications when the operating system does ship. Ultimately, users will only gain the ability to run low-end Windows 95 applications that take no advantage of the high-end NT platform, according to several developers.

Having second thoughts

This predicament is pushing developers to question their support for the Windows 95 logo program.

"No developer wants to deliver a product that doesn't add value and which he has not been able to beta-test and quality test," said Tom Freeman, director of Windows development at WordPerfect. "We never had a timetable to deliver a Windows NT application and have not firmed up any."

"We're reviewing the aspects of the logo program to see if it is viable to us," Freeman added.

A Lotus official said his firm will deliver Windows 95 applications soon after the new operating system ships. However, he said he could not say when Lotus would deliver desktop applications that are also compatible with Windows NT.

Before vendors receive the Windows 95 logo, Microsoft will test the applications to its own standards rather than to those of the individual vendors. It will use an outside testing house.

While the logo program is intended to bring Microsoft a suite of applications for NT as well as Windows 95, neither the logo nor the NT-compatibility are requirements for users.

"A logo means nothing to me," said Mark Baltes, director of data management at Minnesota Mutual Life Insurance Co. in St. Paul, Minn. "It doesn't matter if the applications run on NT, either. We have no plans for running NT on the desktop."

Senior editor Laura DiDio contributed to this story.

IBM's OS/2 is still playing catch-up with applications. See page 39.

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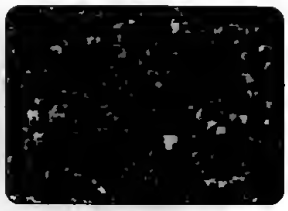

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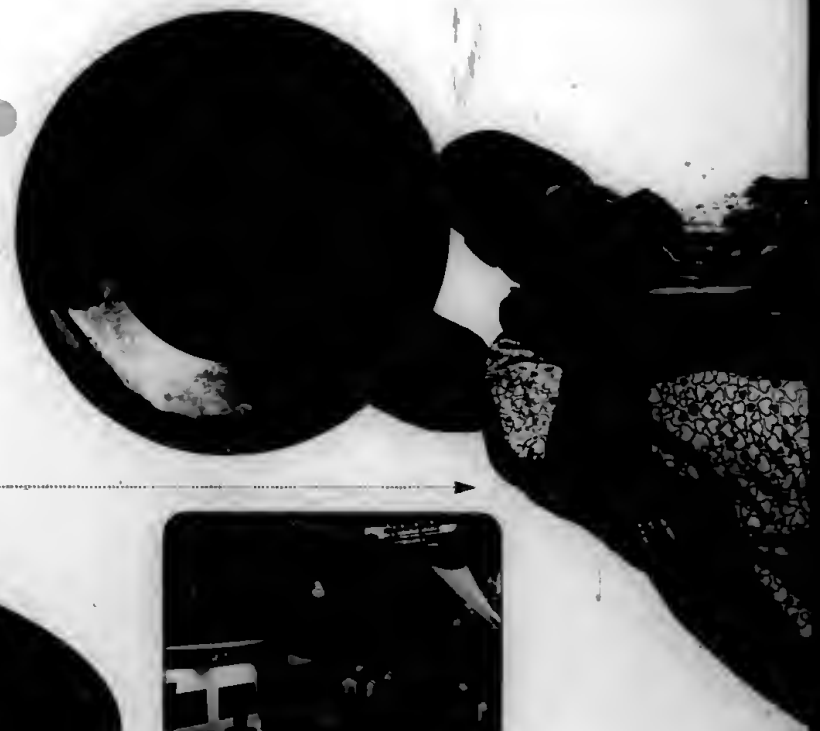

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Associations fight against declining memberships

By Julia King and Joseph Maglitta

Much like the comic Woody Allen, information systems professionals want little to do with the groups that want them as members.

Consider the following evidence:

- The Data Processing Management Association (DPMA) has shriveled to about 11,000 members — down from its peak of 32,000 in 1986.
- Membership in the Association for Systems Management (ASM) has plummeted from an all-time high of about 10,000 in the early 1980s to approximately 4,000 today. Last year's annual ASM conference in Orlando, Fla., drew fewer than 250 paid attendees.
- In Boston, local membership in the Society for Information Management (SIM) has dropped from 220 two years ago to about 160, according to Warren Harkness, president of SIM. Nationally, membership has remained at about 2,700 for several years, Harkness added.
- Since 1989, the 79,000-member Association for Computing Machinery (ACM) has lost 5,345 people — about 8% of its U.S. membership. The New York-based group hopes to close the gap with aggressive recruiting overseas, especially in eastern and central Europe.

Dwindling numbers have caused some to "question whether professionalism is even valued anymore, which is a valid issue," said Martha Butler, the ASM's international vice president for membership and an information technology planner at L. L. Bean in Freeport, Maine.

Shrinking financial support from employers, greater demands on IS professionals' time, stiff competition for members from vertical industry associations, on-line services and product user groups are all factors in declining memberships, association leaders said.

But plainly there is also a lack of interest, especially on the part of younger potential members.

Survey says . . .

Eighty percent of ASM members are between the ages of 35 and 55, according to a 1994 ASM survey.

According to Dorothy Creswell, president of the DPMA's Des Moines chapter, "There's much more focus on 'What's in it for me today?' rather than on 'How can I make the profession better?'"

Behind the times

But Tricia Brownfield, manager of customer support at Turner Broadcasting Systems Corp. in Atlanta, tells a different story. As a former IS manager in Turner's legal department, Brownfield, 34, attended the ASM's annual conference last May.

"My main concern was that they were not up to date," Brownfield said. "The conference was more focused on old technology than today's technology."

Other member criticisms include lack of focus, lumbering bureaucracies and cronyism.

"ASM in Atlanta is a hopeless morass of people trying to cover themselves in case they lose their jobs," complained George Warner, a 25-year veteran member of the ASM and retired IS professional living in Atlanta.

Vendors are another sore spot. Policies on commercial participation in meetings and activities vary.

Even loyalists acknowledge that big changes and new directions are needed.

The professional organizations are all planning similar tactics to fight declining interest: more personal recruitment, expanded on-line bulletin boards and forums, more and better educational programs and a stronger advocacy voice on industry issues.

To improve speed and responsiveness, for example, the DPMA in Park Ridge, Ill., recently reorganized, trimming its board from 268 members to 22. Newly hired executive director Michael R. Wukitsch said the 45-year-old group may explore affiliations with the ASM, Women in Computers, the Black Data Processing Managers Association and others.

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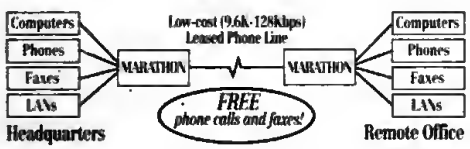

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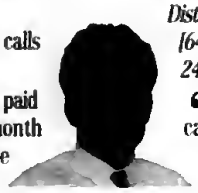

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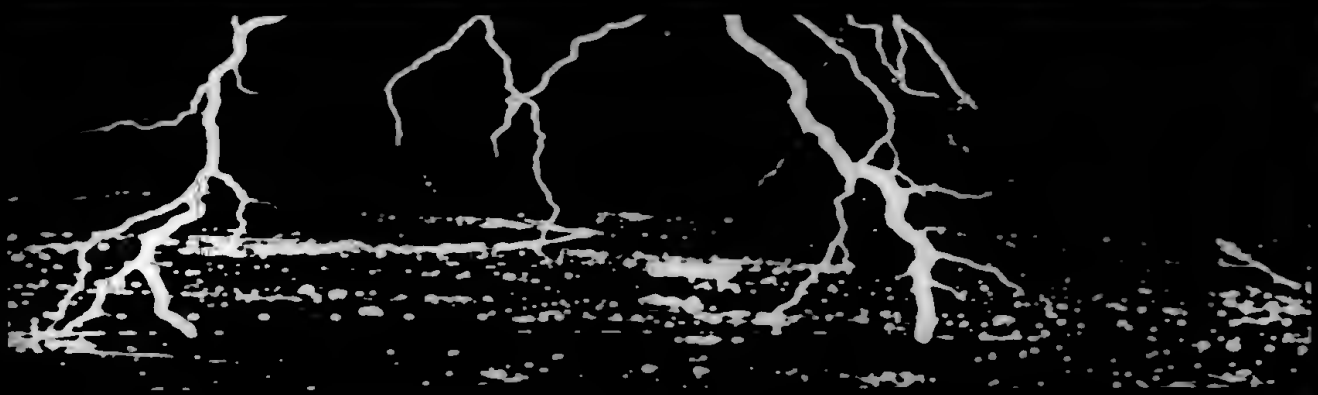

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East Coast firms awaken to high-tech crime

By Tim Ouellette
BURLINGTON, MASS

When $100,000 worth of chips disappeared from the stockroom last August at Data Translation, Inc. in Marlboro, Mass., the open, comfortable work environment that employees knew suddenly changed.

But even after stern security measures were put in place, more chips were discovered missing in October. So now the developer of board-level products for imaging and multimedia has installed steel cages and cameras to protect inventory.

"You try to learn and do things that are reasonable," said Kim Gray, director of operations. "It's very important for us to keep a nice work environment, and it's hard with these measures, but the employees support it. No one wants to see it happen again."

Data Translation is not alone. In fact, more than 200 representatives from New England technology firms met here recently to discuss protecting themselves from high-tech theft. The seminar was sponsored by the American Electronics Association and the Chubb Group.

While technology thefts may have become almost commonplace in Silicon Valley, East Coast computer companies are awakening to the unpleasant news that the problem has moved their way.

Richard Heffernan, a security consultant to the Federal Bureau of Investigation, worries that many fast-growing technology firms believe they are immune. "I've seen lots of start-ups in Massachusetts that are designed like a race car without security — no bumpers, seat belts or air bags," he said. "They are not going to outrace the people who want to take their information."

Take a byte out of crime

Thieves are looking for computer parts, including memory chips, motherboards, modems and disk drives. Here are some steps to help prevent high-tech theft:

1. Minimize exposure during transportation by taking attractive labels off boxes.
2. Create physical barriers by keeping storage areas away from windows.
3. Document the status of your inventory and make surprise inventory checks.
4. Monitor work in process. Separate shipping and receiving areas.
5. Control human resources with intense preemployment screening.

Source: The Chubb Corp., Warren, N.J.

Sgt. Jim McMahon, supervisor of the San Jose, Calif., Police High Technology Detail, estimated that $1 million a week is stolen in software, hardware, chips and intellectual property from Silicon Valley computer firms. Many times, companies need look no farther than their own offices for the culprits, he added.

According to a study by the American Society for Industrial Security, almost 60% of technology thefts are by employees or former employees. At the seminar, speakers stressed the need for increased employee awareness of security needs — along with stricter background checks and internal property control measures (see chart).

But outside jobs are still a major threat and can sometimes become violent. Two weeks ago at a Silicon Valley subsidiary of Burlington, Mass.-based Dynatech Corp., employees were held at gunpoint during a robbery. "All the security in the world can't stop them when they start to carry guns," said Nancy Jenkins, an assistant treasurer at Dynatech who was at the scene of the crime.

"Almost every company in the U.S. has — known or unknown — purchased stolen property this year," McMahon said. "Probably right now, one of your companies is being actively surveilled for a future robbery."

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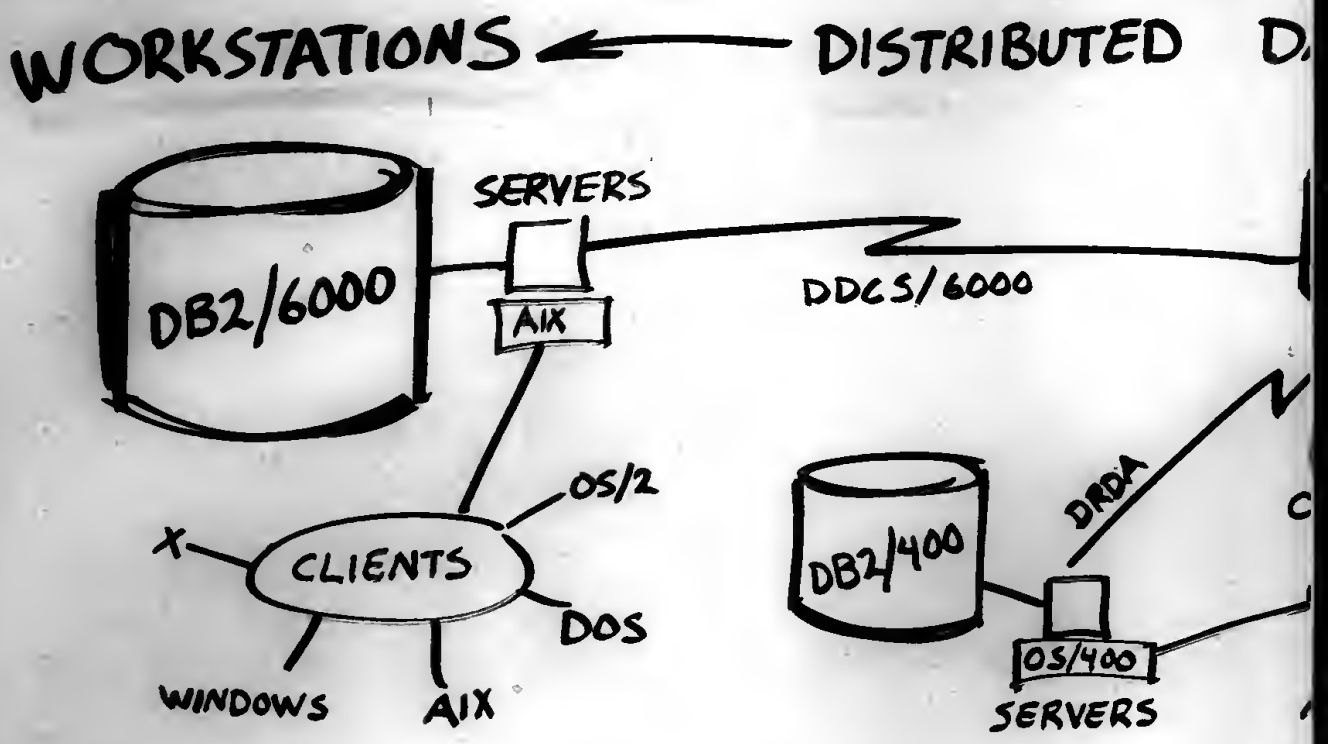

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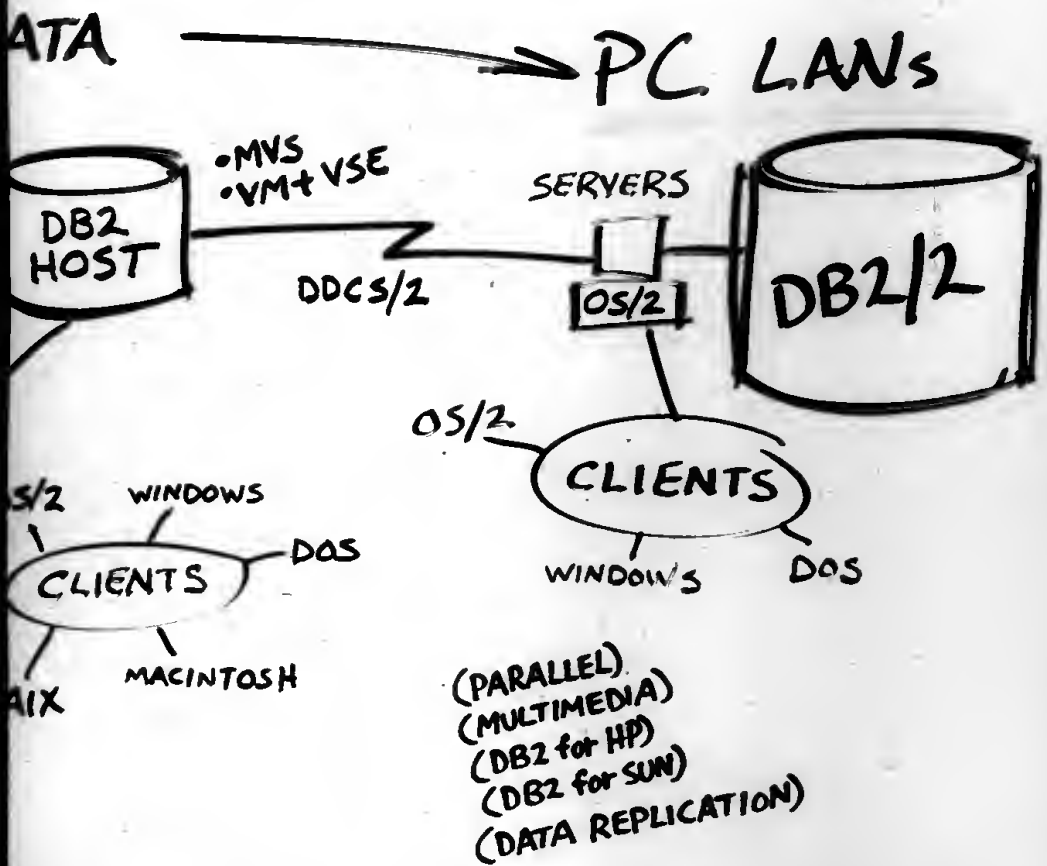

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Federal agency revamps

CONTINUED FROM COVER 1

ventioo of AID is necessary for its snrvival.

The agency, which dispenses $7 billion in foreign economic aid annually with an operating hudget of $550 million, has continually redefined its mission in the face of changing political climates. It has been called "the whipping boy of Congress" and last month was narrowly rescued by the White House from an attempt by the U.S. Department of State to swallow it np.

Until recenily, AIDoffered textbook examples of government fraud, waste and abuse. Its squabbling, iodependent units worked - at cross-purposes; contracts were improperly granted to an exclusive clique of firms with instde connections; hillions of dollars were spent with little accountability; and its systems were so fragmented and unreliable, they were all but useless.

For years, managers focused on process but paid scant attention to measuring outeomes. "It wasn't that we were doing bad things, necessarily — jnst that we had no linkage to any kinds nf results," Byrne said.

Second chance

But Byrne is nothing if not results-oriented, and he has issued a tough mandate that the most important 13 of 28 new applications be operattonal by Oct. 1 (see story below).

Hailed within the agency as a "management wizard," Byrne gets results in part simply by being a tough taskmaster. Asked whether his information systems staff would meet the ambitions October deadline, Byrne shot back, "Yes. My folks periodically say, 'It's really easy for him. He just says 'yes,' but we have to deliver.' My answer to that is, 'Yes, and you will.'"

Three years ago, a presidential commission led by George M. Ferris Jr. declared AID a management wasteland and recommended it be merged into the State Department. But last month, Ferris, chairman of Washington brokerage Ferris, Baker Watts, Inc., took another look at AID and now sings the agency's praises. "AID has made more progress in improving its management systems than has been done in a significant number of years," he said "[Its] effectiveness and morale have been raised substantially"

One eoabler of that effectiveness is a new computer system that for the first time allows the agency to track the financial status and results of its 1,100 overseas projects.

"They are not letting any grass grow under their feet," said Larry Wolfe, chief of the U.S. General Services Administration's Acquisition Reviews Branch. "We see them having made a tremendous amouot of progress in [business process re-engineering] — much more than we expected."

In the past 30 years, the U.S. Agency for International Development has spent some $1.7 billion on aid to Zaire, yet no one can tell taxpayers what the U.S. got for that investment.

> "There were no criteria for saying, 'This is what we should stop doing, this is where we should focus and here are the lessons we've learned.'"
>
> *-AID's Larry Byrne, whose IS staff is revamping ancient and ineffective computer systems to solve such problems*

Pulling it together

In the past two years, Byrne and his boss, Administrator J. Brian Atwood, have shrunk AID spending by 20%, cut management staff by one-third, closed 23 of 72 overseas missions and eliminated 90 organizational units in Washington. Perhaps most important, the agency was restructured in such a way that its various missions and offices could no longer operate independently or without accountability.

"Before, you didn't have one AID — you had five AIDs. Every geographic bureau had its own standards, its owo systems," Ferris explained. "[AID] has now put in uniform programs and project management ac ross the board."

Having redrawn the organizatinnal charts, Byrne turned to the flowcharts. "We said, 'What are the impediments? Where are the systems that don't work?' We had t4 differeot financial systems, none of which spoke to each other."

The systems were so arcane that senior managers had to rely on subordinates to tease information out of them. "The system we had in the field was so complicated, you got numbers with codes, then you had to go look up the codes," Byrne said.

A probe of the systems modernization effort was under way when Byrne, formerly a director at The Hay Group in Washington, arrived in 1993. He found that managers and contractors had been lying to the White House Office nf Management and Budget, saying a key system would be based oo a system from another agency. In fact, the system was being developed mostly from scratch in a huge project fraught with risks.

'Management wizard' Larry Byrne: *'It takes 18 months and one staff-year of effort to move one person' from one mission to another*

Byrne consequently downsized the system plan, broke it into eight discrete business areas and ordered his staff to get the core pieces running hy October 1995. "We are no longer building a grandiose system. We are building a series of small, standard systems that interleave where necessary," he said.

The accountability and project tracking embodied in the new systems will enable a fundamental shift in the way AID carries out its mission aod rewards its employees. "We are trying to become a learning agency so you don't get punished for trying and failing. What we cannot stand is to continue to do the same project in 50 places and not have it work anywhere," Byrne said.

He acknowledged, however, that tbe emergence of real management information carries some risks. "We've said we are going to show the world what we are doing. Yon might as well work with everybody else [at AID] because they are all going to know what you are doing anyway."

When it comes to overseas jobs, learning the culture is essential. See Careers, page 129.

Cleaning house

Scores of AID systems running on IBM mainframes and Wang Laboratories, Inc. minicomputers — some more than 20 years old — are giving way to new integrated applications in eight business areas, from accounting and operations to property management and external communications.

Some 60 systems are being replaced, 14 of them by a single custom-developed accounting system. "What we've done is move away from an environment with many, many stovepipe systems," said Joan Matejceck, AID's deputy director for information resources management.

The custom-made client/server applications will run on IBM RS/6000 and Sun Microsystems, Inc. SPARC servers on Banyan Systems, Inc. LANs. They will draw on agencywide Oracle Corp. databases supported by a standard data dictionary. The applications are being developed with the methodology of James Martin Associates and with computer-aided software engineering tools from KnowledgeWare, Inc. The application code is a combination of Visual Basic from Microsoft Corp. and SQL and Oracle.

The 13 most important applications are expected to be operational this fall. "Larry Byrne's mandate to ns ts to have everyone in this ageney touched by ehange — both culturally and from a tools point of view — by Oct. 1," Matejceck said.

The ageney's annual IS budget is $55 million.

One key system, Pipeline Information and Program Evaluation (PIPE), is now operational. It consolidates electronic feeds from 42 overseas financial systems in an Oracle database. "It gives us what we didn't have before — a way to look at funds in the pipeline across missions and see in one place where dollars are located," Matejceck said.

PIPE's predecessor required that paper printonts sent to Washington by mail be manually keyed into a database. That, in turn, produced reports that were diffieult to understand and rarely used, according to AID. Determined users with special analytical requirements often had tn rekey data into yet another system.

Now, PIPE allows anyone in the agency to retrieve near-real-time project balances and display them on one Windows PC screen in a spreadsheet, pie chart or bar graph. PIPE is expected to reduce the time required to plan a new program from six to nine months to as little as 30 days. — *Gary H. Anthes*

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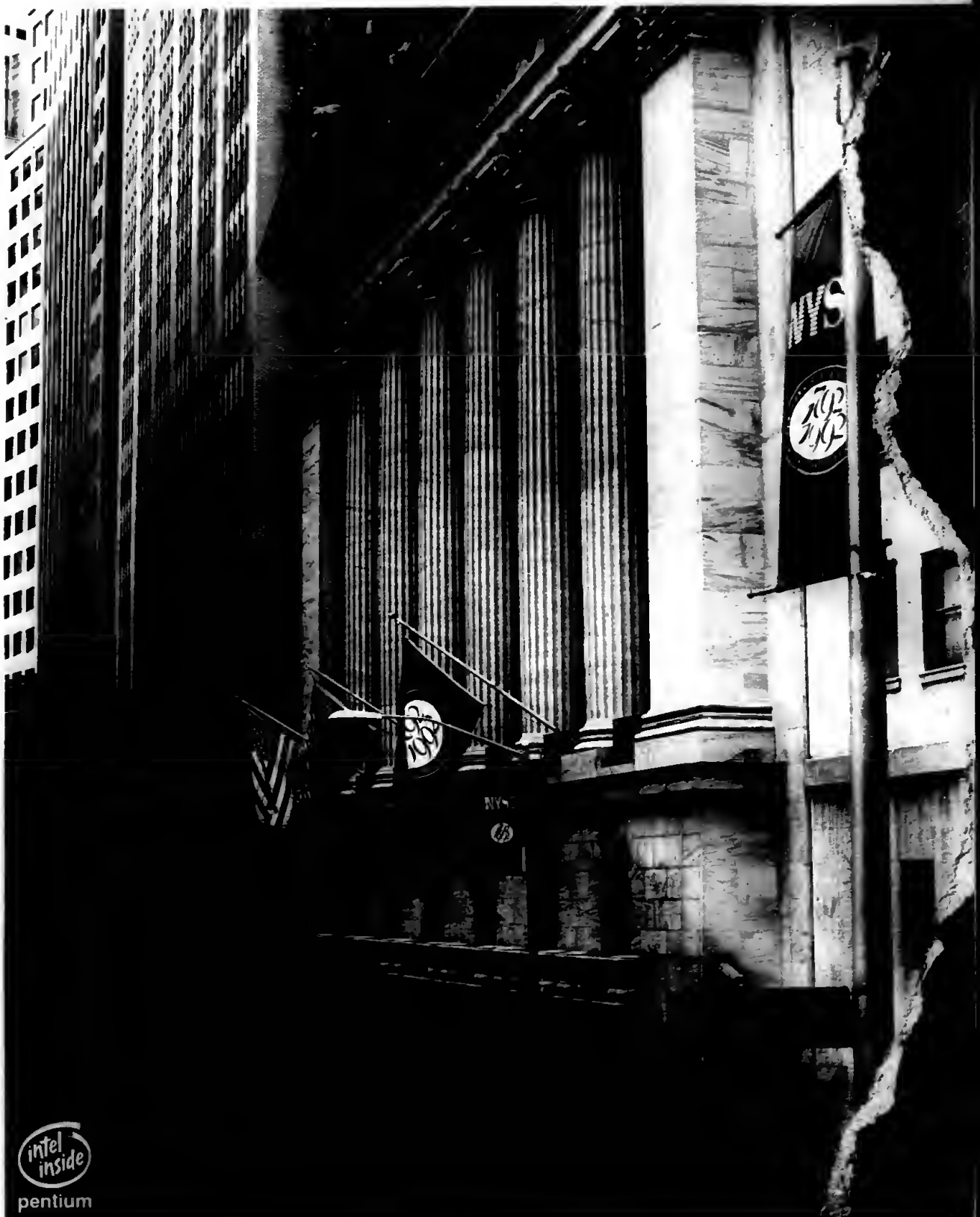

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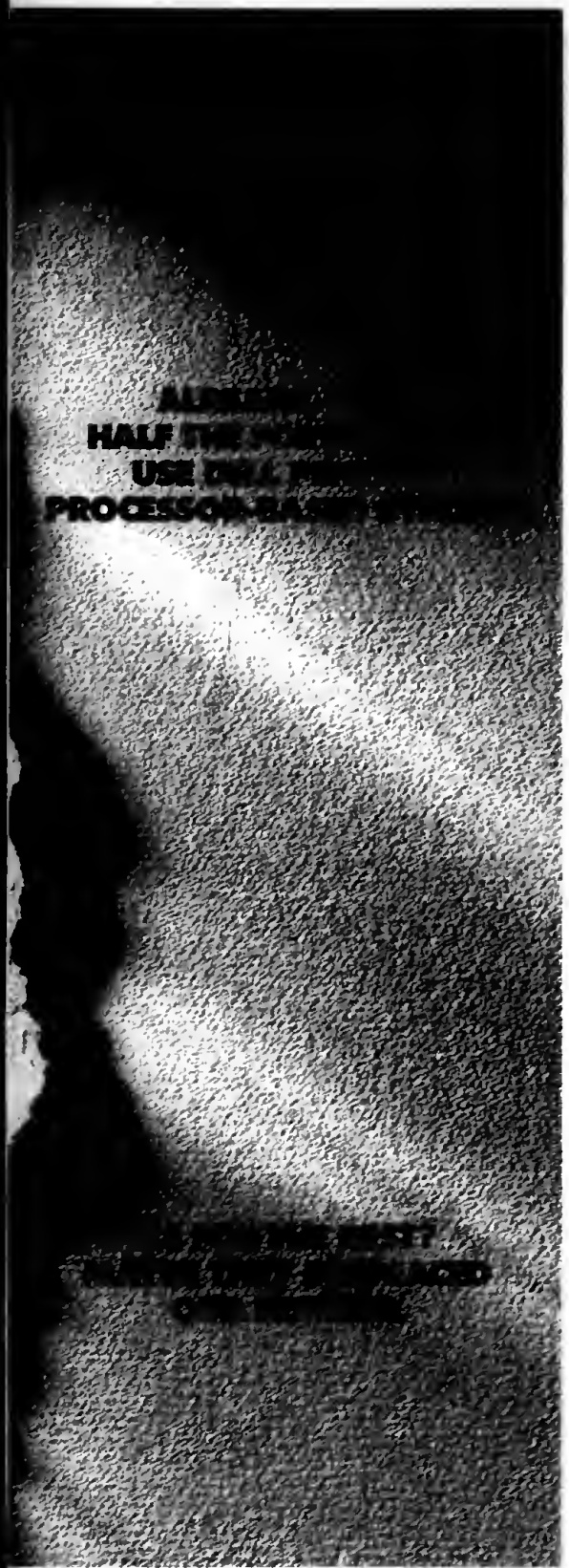

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Briefs

Venture capital soars

According to a survey by Coopers & Lybrand, venture capitalists invested more than $1.3 billion in U.S.-based companies for fourth-quarter 1994. More than 20% of those dollars went to companies performing financial, distribution and entertainment services. Software and communications/networking companies were among the industries that followed closely behind, the report said.

Home PC sales up

A separate survey of 1,500 U.S. households showed PC penetration of U.S. homes rose from 27% in July 1994 to 31% in January 1995. Conducted by Odyssey Homefront, Inc., the study found 30% of households with PCs have CD-ROM drives, compared with 25% in July 1994. However, only 7% of those homes use on-line services.

Informix results in

Informix Software, Inc. in Menlo Park, Calif., last week reported $150.1 million in sales for 1994's fourth quarter, up 48% from the $101.4 million posted in the same period a year ago. Profits grew 32%, from $18.1 million to $23.8 million. Total sales for 1994 reached $468.7 million, compared with $352.9 million for 1993. Profits were up 18% for the year, from $56.1 million to $66.2 million.

SGI on buying spree

Silicon Graphics, Inc. (SGI) in Mountain View, Calif., last week acquired two software graphics firms — Alias Research, Inc. and Wavefront Technologies, Inc. — in a stock swap valued at $500 million. Toronto-based Alias and Santa Barbara, Calif.-based Wavefront will form an SGI subsidiary.

SHORT TAKE NEC Corp. has made a "significant" investment in SunDisk Corp., while Seagate Technology has increased its equity investment to maintain its 25% stake in SunDisk.

Unisys ups client/server ante

Usoft spin-off to incorporate recent Dutch acquisition

By Elizabeth Heichler and Thomas Hoffman

The crowded market for client/server development tools has gained another player, courtesy of Unisys Corp. The Blue Bell, Pa.-based company will announce today that it has established an independent subsidiary called Usoft that incorporates the recently acquired Dutch tool maker TopSystems International.

Unisys is investing $50 million on the acquisition and start-up funding, according to several analysts briefed on the initiative. The software venture is expected to generate $30 million in first-year revenue, the bulk of which is projected to come from sales in Europe. The company will use $4 million in research and development seed money in its first year, analysts said.

Usoft at a glance:

- $50 million start-up funding from Unisys.
- $30 million projected first-year revenue.
- $4 million first-year R&D spending.
- 165 employees.

Oracle Corp. sales and marketing veteran Michael Seashols has been recruited to head the Brisbane, Calif.-based venture.

TopSystems' client/server application development product — originally called TopWindows and now renamed Usoft Developer — is a model-driven tool that automatically generates applications and database structures from business logic defined in a central, server-based repository.

TopSystems has been known primarily as a database consultancy specializing in Oracle and Sybase, Inc. databases. Its greatest market penetration is in the Netherlands and the UK, said Heather Stark, managing editor for Ovum's European Software Market Service.

"They're at an interesting point in their growth, as they still have more revenues from services than products," she said. "They would naturally be looking for a partner, especially to break into the U.S. market."

New rules

Usoft's business plan aims to engineer a radical shift in the breakdown of North American revenue during the first year, from 75% services and 25% products to 40% services and 60% products, said Scott Koppang, vice president of North American operations.

Several Unisys customers who recently began shifting to client/server architectures said they are interested in exploring Usoft's offerings. For example, Blue Cross/Blue Shield of North Dakota has a Unisys A Series mainframe and Unisys U6000 Unix machines mixed with IBM RS/6000 boxes; it has been using Boston-based Open Environment Corp.'s OEC application development tool kit for the past few years to provide client and server interfaces to Microsoft Corp. Visual Basic applications.

But because the Fargo, N.D.-based health care insurer has yet to ramp up its client/server application development, "we'd be interested in exploring what [Usoft] is bringing to market," said Kevin Erickson, a Unix administrator at the agency.

What lies ahead?

Wall Street analysts applauded Unisys' aggressive push into the burgeoning client/server application development market. Yet some analysts warned that the vendor's software activities will not be a panacea for its client/server ills.

Unisys "has bigger problems to worry about. They have to focus on cutting costs to match the client/server hardware margins since their mainframe business has flattened out and will be going down in '95," said Curt Rohrman, an analyst at CS First Boston Corp. in New York.

Industry analysts, on the other hand, were cautiously optimistic about Usoft's chances for success. Several also noted the importance of Usoft's establishing an identity distinctly separate from Unisys.

Management key to Cabletron's Synthesis

By Stephen P. Kiel Jr.
SEKTON, MASS.

■ Cabletron Systems, Inc. will break its yearlong silence this week and unveil its long-term vision for guiding users to the promised land of switched virtual networking [CW, Feb. 6].

Based on Cabletron's Secure Fast Switching (SFS) technology, the Synthesis framework breaks away from traditional router-based internetworks and meshes Asynchronous Transfer Mode (ATM), virtual LAN, routing and switching functionality. Synthesis is similar in concept to previously announced strategies from competitors Cisco Systems, Inc., 3Com Corp. and Bay Networks, Inc.

Management is everything

However, Cabletron holds one potentially major trump card that observers said could differentiate Synthesis from the herd: management. In conjunction with the rollout of SFS in the third quarter, Cabletron is expected to deliver Automated Management software designed to provide policy enforcement, connection management, accounting and security services in switched environments [CW, Nov. 21, 1994]. No other internetworking provider offers such capabilities on an enterprise level.

In addition, Cabletron's Spectrum 3.0 management platform recently vaulted over IBM's NetView platform into the No. 3 market share position, according to industry estimates.

"Network management is a big differentiator for the company," said Jim Metzler, an analyst at The Yankee Group in Boston. "They're really making it clear that policy-based management is the way to go."

For example, the Automated Management software will provide the means for businesses to assess data communications costs on a departmental level, much like a telephone bill.

By putting equal emphasis on hardware, software, service and support and by developing most of its technology in-house, Cabletron is aiming to become a one-stop shop for switched internetworking.

Some observers questioned whether Cabletron is biting off more than it can chew with its lone wolf approach. Cisco, 3Com and Bay Networks, for example, are relying on acquisitions and close partnerships to meet their goals.

Cabletron's Craig Benson: *"We have the engineering horses to pull this off"*

But can they do it?

"This is one hell of a technological challenge they've bitten off, and I have my doubts as to whether or not they can pull it off," said Eric Hinden, an analyst at Strategic Network Consulting in Rockland, Mass.

Cabletron does not think it will choke any time soon. The company argues that its size — it boasts 4,609 employees, nearly 1,700 more than nearest rival Bay Networks — and strategic relationships allow it the luxury of competing largely on its own.

"We have the engineering horses to pull this off, and we have key relationships with Fore [Systems] and Cisco," said Craig Benson, chairman and chief operating officer. "I don't think I'd be any better off buying someone off the street than by trying to do it myself."

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(d) Unix (h) NeXTstep

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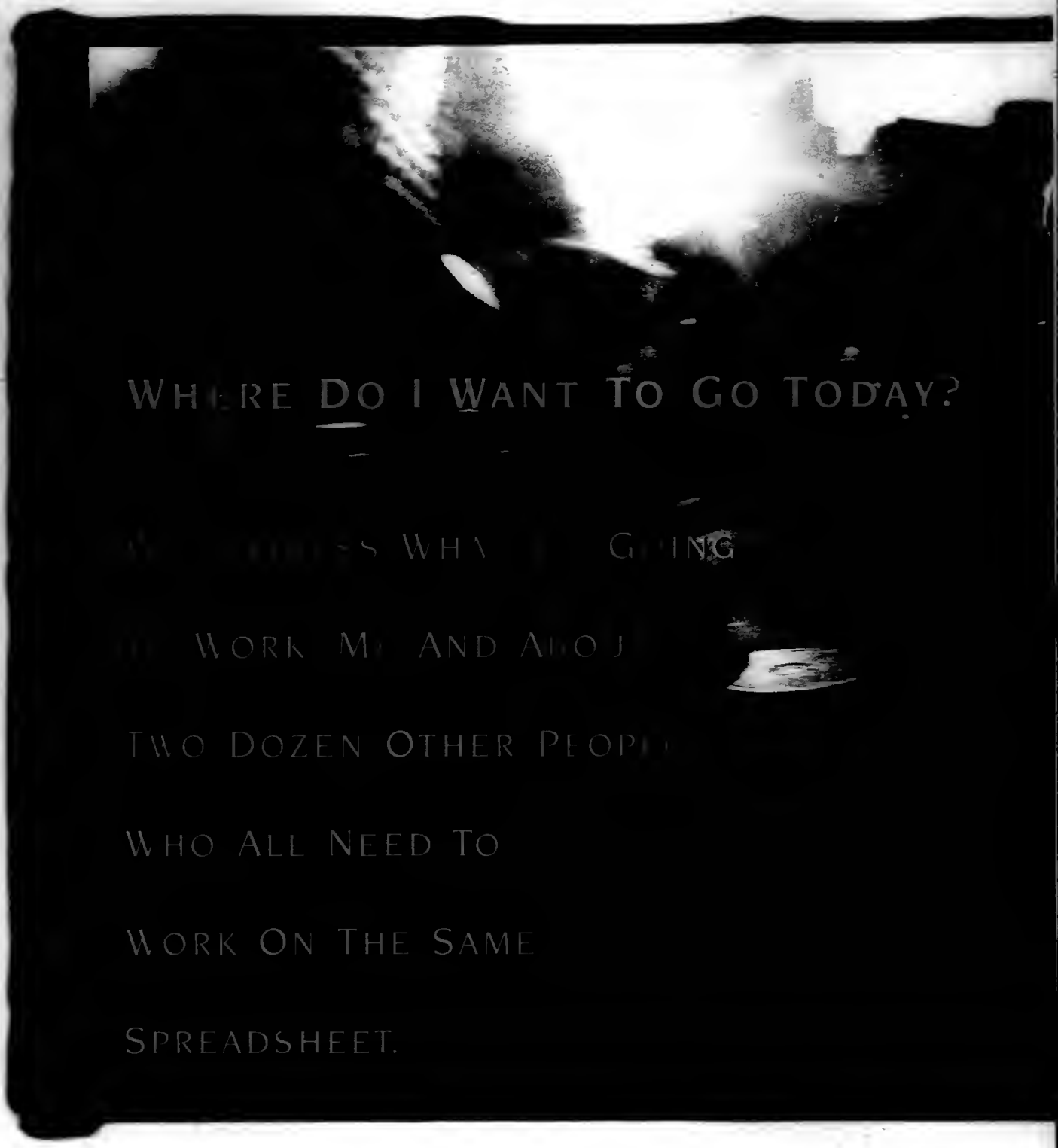
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Wake-up call

No, Microsoft isn't going to pieces. Nor is it about to be defrocked as the temporal leader of the computer industry. And Bill Gates will likely remain at or near the top of *Forbes'* list of the wealthiest people for quite a while.

But make no mistake about it. The hinges are creaking. The front lines are thinning. The company is hitting what runners in the Boston Marathon know as Heartbreak Hill — a punishing incline that comes just as runners sense they've spent most of their energy and still have several miles to go.

Our special report on Microsoft last week showed a company of tremendous underlying strength. However, corporate users are challenging it to demonstrate more convincingly that it can be a strong partner. Being chronically late with bellwether enterprise products such as Cairo, Windows 95 and Exchange server doesn't improve Microsoft's image in this regard. As one corporate user told us, "This never would have happened with an IBM or DEC."

Microsoft's main challenges are fundamental. It is one thing to undergo rapid growth if you are a billion-dollar company with, say, 2,500 employees. But to grow 25% annually as a $5 billion company means hiring some 4,000 new people in one year and 5,000 more the year after that. And they can't be just anyone; they must be what Gates calls the smartest people in world.

Microsoft managers openly lament the difficulty in finding enough good people. Staff shortages were linked to delays in releasing Cairo, as developers were redeployed to other people-starved projects. Microsoft can try to grow by buying companies, but as any experienced CEO will tell you, one of the hardest things to do in business is to make a merger work.

While enterprise projects limp along and are delayed well past targeted release dates, the company is aggressively expanding into various new and well-publicized ventures that have little to do with enterprise solutions — CD-ROMs for children and on-line services, for example. These projects will also compete for scarce human resources and R&D funding.

The bottom line is this: There is only so much a company can do. There is substantial evidence that Microsoft has bitten off more than even it can chew. At a time when perhaps a little retrenchment and refocusing is in order, Microsoft is plunging headlong into new, different and (at least for now) incompatible markets. Microsoft's answer to this conundrum is "it's all software, so it's all related."

So the question is not whether the company is overextended but whether the management team can lead the maturing company past the challenges before it — challenges that may not resemble those conquered in past.

Bill Laberis

Bill Laberis, *Editor in Chief*
Internet: *blaberis@cw.com*

Confusion starts with a capital K

In your editorial "Cleaning house?" [CW, Jan. 23], you lament the actions that Kmart's management took with regard to the CIO but applaud the ousting of the chairman. It seems clear that Kmart would have benefited more from an award-winning customer-satisfaction system than from the award-winning client/server strategy.

My point is simply this: The CIO is part of management, not merely the "dean of technology." Customer satisfaction is the province of all employees. No operation can be a success if the patient dies.

Perhaps the uncertain tenure of many CIOs is rooted in the attitude of "It's not my job to make shopping in the stores a pleasant experience that customers will want to repeat. My job is concerned with spending my IS budget to move these legacy systems to client/server."

Technology cannot turn substandard processes into golden eggs.

Dennis E. Noonan
Wellesley, Mass.

Your editorial was "... like deja vu all over again." I'm retired now, but it's easy to see some things don't change. I spent most of my career at some level of management at data-processing organizations; much of the time I served with questionable distinction in what is now referred to as the CIO position for more than one company.

In 1969, after having been fired from my second CIO job in two years, I wrote to author Peter Drucker. Drucker was kind enough to respond with a sympathetic letter in which he suggested my situation was not unique.

Based on Carlson's experience at Kmart, it's obvious, to me at least, that the person in charge of computer technology is still an outsider to the "old boy clique" that runs most firms. It's always easier to put an outsider on the street than someone who's family.

Earl Gates
Decatur, Ill.

In your Jan. 23 editorial, you cited the case of chief information officer Dave Carlson, who was fired by Kmart, and then leaped to the conclusion that he was the scapegoat of a corporate management seeking someone to blame for Kmart's problems. Would it not illuminate the reader to quote Kmart's "official" reason for the dismissal? Does one CIO's firing constitute an industry trend?

In the article, you cited your wife's recent experience at a disorganized, crowded Kmart. She left the store after becoming frustrated with its long, slow lines and filthy bathroom.

But the most important observation might have been made if she stayed in line. Were the lines longer because the new and "improved" client/server computer system slowed the check-out process?

Hilton Evans
Randolph, Mass.

Pricing parity

In a Jan. 23 commentary ["To migrate or not to migrate"] regarding whether VMS sites will switch operating systems when switching to a RISC platform, Jean Bozman says customers "...may chafe over OpenVMS's higher price tag..."

Although Windows NT pricing is lower, Digital has claimed for at least a year that its VMS prices now match its OSF/1 prices and thereby match prices of other major Unix vendors. I have not found data to dispute that claim, but then again, I have not been looking for it. If you have evidence that Digital has not followed through on that pricing parity claim, that would be a real news story. Certainly Digital has historically set higher prices for VMS, and regardless of current pricing, Digital will suffer from leftover impressions. But I would hope to rely on *Computerworld* to cure historic impressions by properly characterizing current Digital pricing.

Larry Kilgallen
Cambridge, Mass.

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Feel the Rhythm

James Ho

Competitive market forces are moving businesses toward a customer focus. Coosequently, they have an increasing need to entrust control of the work process to the frontline workers who deal with the customers.

While information technology has become the enabler io the re-engineering of business operations, there is a hidden obstacle to its full payoff. This obstacle is a mind-set among technophiles and technophobes that our work and life will be driven by technology.

With the pace of technological advancement, it is equally unrealistic for us to expect technology to be driven by our needs. It is therefore critical that we strike a proper balance.

To captare this dynamic, I refer to the outlook for continual improvement — in business operations with tbe timely support of information technology — as B.I.O. Rhythm. The initials stand for Business Information and Operations. That they help spell the physiological phenomenon of biorhythm is perhaps not altogether inappropriate. Current management thinking does accommodate the view of husiness enterprises as dynamic organisms capahle of growth, learning and evolution.

Essentially, information and operations are identified as two inseparable yet distinct dimensions of any husiness endeavor, and an upward-sloping curve can be visualized as an ideal path of balanced and effective improvement. In practice, zigzagging lines on this B.I.O. Rhythmic path indicate that long-term improvement can be considered as the combined results of steps taken in the directions of information and operations. While any sequence of steps is conceivable, those with alternating directions enveloping the ideal path reflect conscious and successful attempts to attain B.I.O. Rhythm.

Within this framework, the success or failure of most attempts to exploit technology can be explained.

Within this framework, the success or failure of most attempts to exploit technology can be explained. Why is home banking so slow to catch on while automated teller machines flourish? After all, the technology involved is essentially the same. The difference lies in the dispensing of cash, the lack of which sets home banking back in the dimension of operations. And while there is no doubt of its popularity, does the fax machine really change the way things get done? Why are most computerization projects for megabureaucracies doomed to failure? The answers can be found in terms of B.I.O. Rhythm.

This mind-set also fits well with today's better-known managerial precepts. In particalar, it can become a tangible agenda in Total Quality Management and provide a cultnral foundation for business process reengineering.

Along with the customer focus, B.I.O. Rhythm redefines employee loyalty and job security. Loyalty is a commitment that customers get value; security is a commitment that anyone who can redoce the work in a job will not be out of a job. This cultnre can be the key to prosperity in the Information Age.

Ho is a professor of information and decision sciences at the University of Illinois at Chicago. This column is based on his new book, *Prosperity in the Information Age: Creating Value with Technology — From Mainframes to Boardrooms*. His Internet address is james.k.ho@uic.edu.

In search of 'best practices'

Paul A. Strassmann

Making recommendations hased on preconceived ideas is easier than coming up with advice based on evidence. Some of the most prominent U.S. consultants now parade before their clients exhaustive catalogs of "best practices" for managing information systems.

How consultants conclude that their lists fit a elient's needs is rarely open for discussion.

I have a large collection of "best practices" from consultants and professors. The fundamental flaw is that none of these lists has ever been publicly validated by any independent measares of performance, such as profitability or gains in market share. Each list contains different items in varying order of importance.

The presumption that someone can compile a generic list of what makes for excellent information systems is misguided.

There was a time when owning IBM stock, smoking Lucky Strikes, driving a Cadillac or depositing your money in a savings and loan association would always make somebody's "best" list. But if you suspect that you have acoe or malaria, a *Good Housekeeping* manual of recommended health practices will not do you much good. You had better find someone with sufficient know-how to correctly prescribe the remedy.

The "best practices" approach allows a consultant to write his report on the basis of somebody's anthoritative checklist. That is quite easy to do, especially if the consultant lacks operating experience. He can accomplish this qaickly because he bypasses painstaking fact-finding.

The presumption that someone can compile a generic list of what makes for excellent information systems is misguided. Every company is different, and every organization has different needs. Therefore, every IS implementation must fit the particular conditions of a particular enterprise.

I have checked the names of the declared "winners" from a number of computer magazine ratings and find that the selections had dismal records: More than one-third were losing shareholder value when they were nominated, and more than two-thirds foand themselves in thal position within three years of the award.

The principal finding from a detailed analysis of the characteristics of the *Computerworld Premier 100* companies is that they are different by just aboat every conceivable measure. CIOs report to different levels in their organizations. Many of them rely on mainframe computing using older machines. Some of them distribute PCs widely; others do not. Some of them have large information technology expenditures per capita; others are miserly in their spending. Some devote more than half their budgets to new systems development; others coast along on program maintenance.

No consistent pattern emerges from the 28 measares collected from the *Premier 100* companies, whose financial and productivity performance for 1992-1994 was indisputably superior to that of 900 other U.S. corporations.

Excellence arises from the way management harmonizes its resources, which are different for each organization. The future belongs to those who can cultivate diversity and adapt to conditions uf the marketplace rather than follow preconceived theories. This is why I believe the current fashion of telling companies the generic "best practices" to follow is only a temporary setback from traditional methods that call for observation, testing and validation of results.

Strassmann is a consultant in New Canaan, Conn., and author of *The Business Value of Computers* (1990) and *The Politics of Information Management* (1994).

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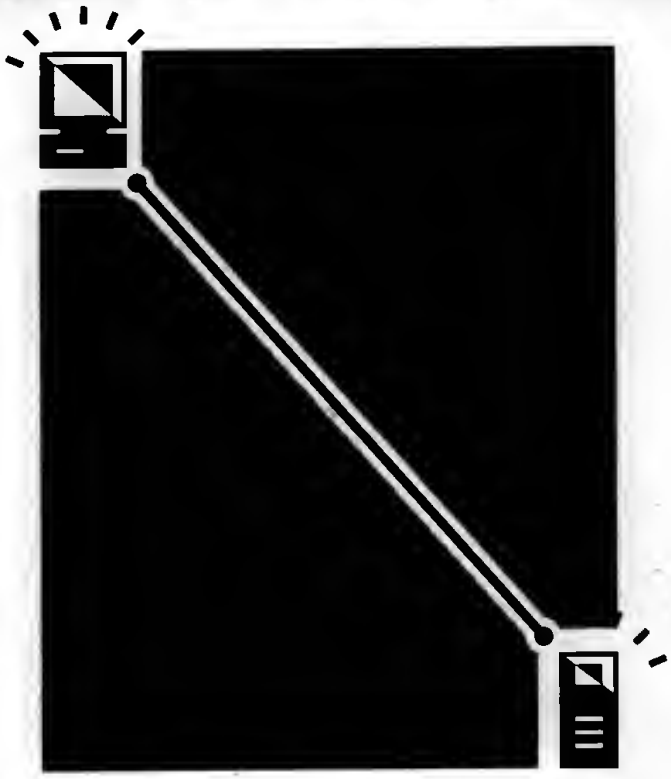

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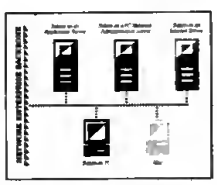

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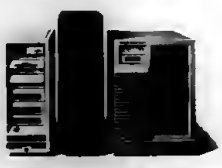

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Desktop Computing

Microrim comes late to Windows party, 44
New products, 69

New apps for OS/2 remain hard to find

Windows still the corporate platform of choice

By William Brandel

Try as it might, IBM cannot seem to erase end-user preoccupation with Microsoft Corp.'s Windows and its applications. Nor has the OS/2 operating system attracted a raft of new applications.

According to IBM, more than 1 million copies of OS/2 Warp have been sold. However, analysts say the current rate of sale for OS/2 is not impressive when compared with Microsoft offerings such as Windows 3.1.

Tough market

"Corporate customers have already voted on OS/2 vs. Windows on the desktop," said Matthew Cain, an analyst at Meta Group, Inc., a market consultancy in Stamford, Conn. "It is clear that IBM is not expanding beyond its traditional OS/2 base."

This has become apparent most recently in the applications community. Despite IBM's latest attempt to ignite the application development market for OS/2 and the delivery of the Warp version of OS/2, there are few new takers.

For example, WordPerfect, the Novell, Inc. Applications Group, released its latest word processor for the OS/2 market. The product does not run natively on OS/2, however, but enables an OS/2 user to run WordPerfect for Windows 6.1 under OS/2.

The result is that the OS/2 user can get some workplace shell integration by running a Windows application.

"IBM shot themselves in the foot when they gave OS/2 users the ability to run Windows applications," said Karl Wong, an analyst at Dataquest, Inc., a market researcher in San Jose, Calif.

WordPerfect offers automatic document detection (ADD) technology so users running OS/2 can automatically register files as document objects in the OS/2 Workplace Shell. WordPerfect users can then perform some object-oriented tasks as would any other OS/2 user, such as launching an application or printing a document using the drag-and-drop feature.

IBM, *page 45*

Package deal

Lotus' OS/2-based application suite outsells the company's OS/2-based stand-alone applications by a 2-to-1 margin.

LAN servers flourish; support stays in flux

By Jaikumar Vijayan

■ As the LAN server begins to play a more important role in corporations, purchasing and support responsibilities are moving from individual users and business units to centralized information systems departments.

End users have most of the purchasing power when it comes to PCs, but corporate IS is the higher authority when servers are at stake, according to a recent report from International Data Corp. (IDC) in Framingham, Mass. Although end users still retain some purchase authority for servers, IS handles almost all support functions.

Servers: a user initiative

This seems to be the outcome of an attempt to standardize and manage the explosion of LAN servers in the workplace, analysts said.

"Servers have been put in place in a pretty autonomous way by the PC users and business units and were never particularly an IS initiative," said Frank Gens, an analyst at IDC.

"What's happening now is that there is an increasing dependency on servers. They have really become an integral part of the business infrastructure," Gens added. As a result, users have begun to turn to IS for support, he said.

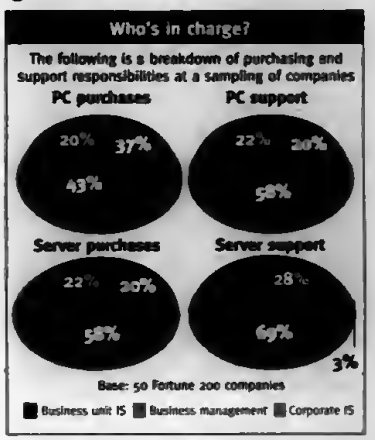
For instance, as more complex and business-critical applications such as databases and electronic-mail applications are run on servers, users are beginning to relinquish support functions — and in an increasing number of cases, purchase functions — to IS.

"Broadly speaking, the pendulum is swinging back. It is increasingly being realized that the IS community has certain skills" that are useful in a distributed environment, said John Daly, an analyst at Summit Strategies, Inc. in Boston. IS obtained those skills maintaining larger mainframe and minicomputer networks and systems.

Slow ride

Another reason for the greater IS role is that despite the rapid proliferation of LANs, the tools necessary for operating and maintaining a heterogeneous, distributed environment — such as network operating systems and man-

LAN servers, *page 45*



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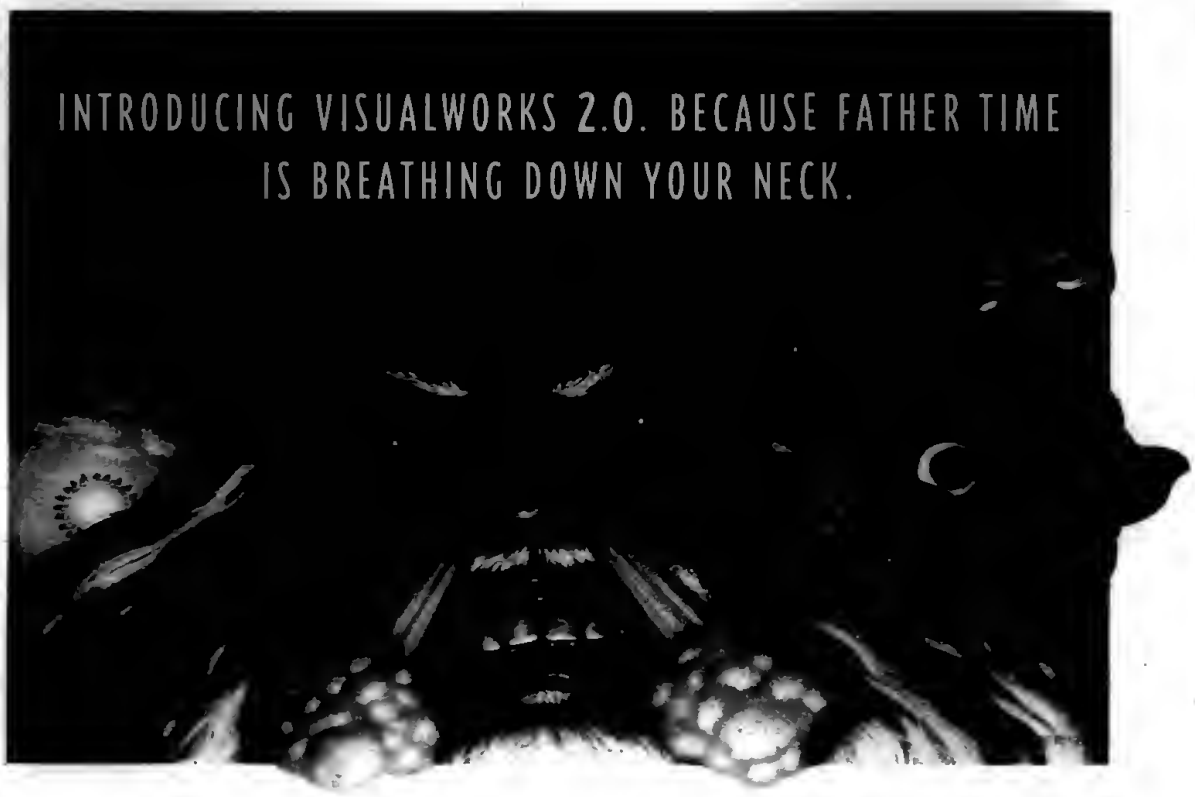

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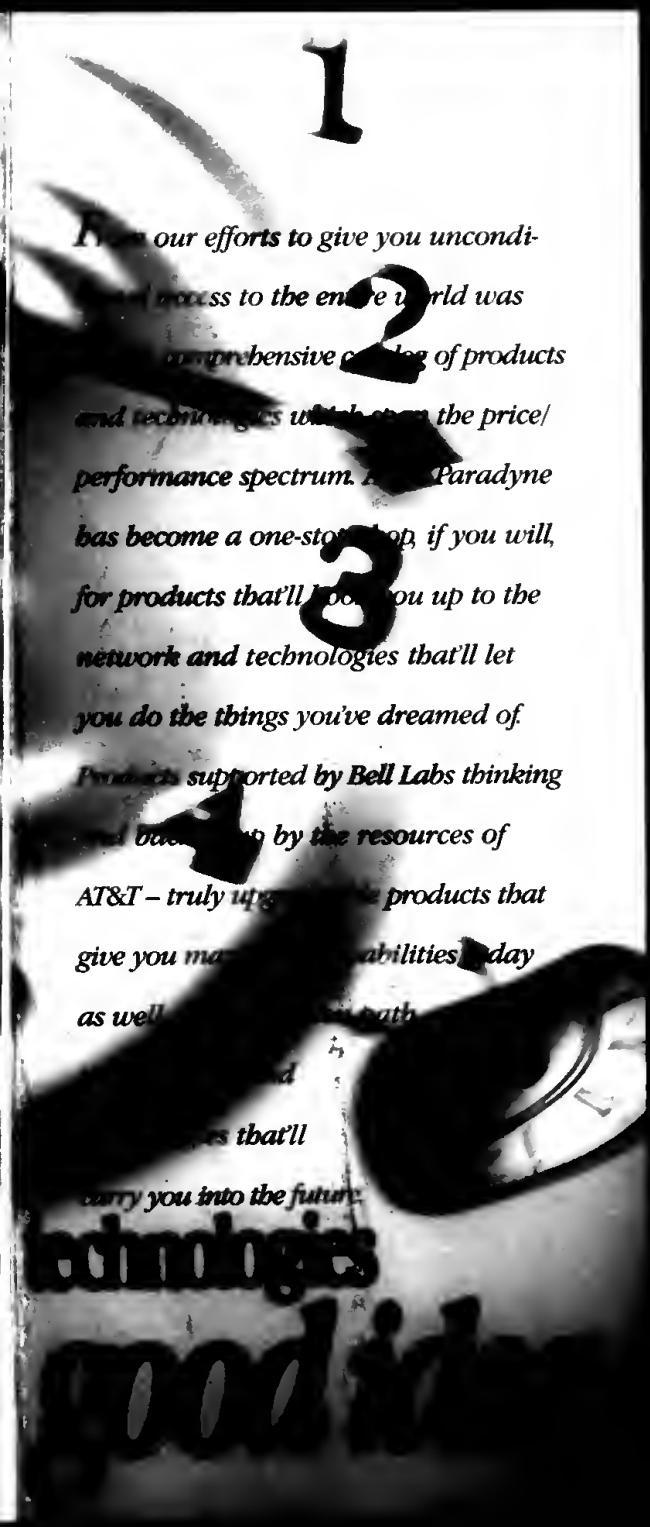

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Richard Finkelstein

Windows 95: Yes, but when?

To Windows 95 or not to Windows 95, that is the question. Well, actually that isn't the question because Windows 95, thanks to repeated delays, is still not available. This reprieve gives us a few extra months to contemplate the consequences and costs of migrating to Windows 95.

However, I don't think organizations are in the mood to think about Windows 95 costs. Based on surveys in my seminars, the vast majority of organizations have not budgeted any money for migrating to Windows 95 this year, and they seem to hope that if Windows 95 is delayed long enough they won't have to budget for it next year.

This is no surprise. Unlike Microsoft and other software vendors (and investors in these software companies) that stand to make big money off Windows 95, most organizations have nothing to look forward to except high costs, risks and instability. This dichotomy of interests may account for the nonstop hype for Windows 95 from software vendors and the general lack of enthusiasm among customers.

> Unlike Microsoft and other software vendors that stand to make big money off Windows 95, most organizations have nothing to look forward to except high costs, risks and instability.

The big move

Nothing like this migration has ever been attempted. Millions of PC users will have to be converted over time to Windows 95. This means millions of hardware platforms will have to be reoutfitted and retested. There is no telling how many hardware components will have to be replaced and how much time and money it will take to track down and fix incompatibilities.

Windows 95 software compatibility is still a big question mark. While Microsoft claims to have shipped 60,000 beta copies, there is no way to tell how many users are really fighting through bugs to get Windows 95 to work. My guess is not many. Who knows what will happen when the fragile mix of current Windows 3.1 software is thrown into the Windows 95 soup. On top of all this, customers will find they have to upgrade some software, while other software will not be upgradable.

Windows 95 will bring to the forefront the true costs of distributed computing. This is nothing like mainframe or minicomputer migrations, when centralized hardware and software could be tested in parallel for many months before switching. There is no way to parallel test the millions of different Windows platforms that have been deployed in the past few years.

What's more, the cut over to Windows 95 requires users to burn their bridges. Once you have installed Windows 95 there is no going back. With no return ticket, users will be forced to forge ahead and work through these problems — probably in the evenings and on weekends.

Can it be that easy?

Microsoft, of course, has a different view of the world — a world that exists only within the borders of Redmond, Wash. A Microsoft spokesperson related to me a more optimistic scenario for a typical Windows 95 migration. Organizations will load Windows 95 on a network server one evening — any evening, it doesn't matter. The system will be downloaded from the server to hundreds or thousands of workstations overnight. The next morning users will sign on as usual, take a 20-minute tutorial and be off and running.

This rosy scenario — which conveniently leaves out the crashes, errors and other mishaps that an average user will encounter — is the only way Microsoft could possibly justify its absurdly low migration estimate of $600 per workstation. I can't even install a word processor for this kind of money much less an entirely new operating system.

This is not to say that converting to Windows 95 is not necessary. Windows 95 is Microsoft's attempt to fix the fundamental flaws in Windows. Fixing these flaws will establish a platform that will finally allow organizations to move ahead aggressively with plans for critical client/server applications. Windows' bugs are probably the primary reason for client/server project overruns and failures.

Of course, it would have been better if Microsoft had never introduced Windows and all of its flaws by sticking with the OS/2 architecture. This could have saved us all lots of time, money and, in some cases, pain. But what's done is done. Windows 95 will be at our desktops, but a cautious migration plan is the way to go.

I expect Windows 95 characteristics will be somewhat better understood after being in production for a year. Organizations will slowly deploy new hardware and software that will fit nicely into Windows 95. Time will also be spent fixing the inevitable bugs in the first releases of Windows 95. Windows 96 and Windows 97 seem like reasonable goals for most organizations. It looks like it's time to learn a new operating system — just when I thought I had conquered the current one.

Finkelstein is president of Performance Computing, Inc., a Chicago consultancy that specializes in client/server technology. He can be reached by CompuServe at 72240,2536.

Corel tries its hand at suites

By William Braodel

Thinking that it sees a low-end market opportunity ripe for the taking, Corel Corp. has lined up technology-sharing and licensing agreements with two other software vendors in an effort to deliver a Windows 95-based application suite later this year.

But instead of competing directly with the big suite players for enterprisewide corporate accounts, Corel is setting its sights on individual departments and smaller businesses.

Suites win

Corporate sites snatched up $790 million worth of desktop application suites last year, according to IDC.

For now, the suite is called Corel CD Office and will be packed only on CD-ROM. The suite, like those from Microsoft Corp., Lotus Development Corp. and WordPerfect, the Novell, Inc. Applications Group, will include a word processor, database, spreadsheet and graphics application.

Corel pulled together the applications by drawing on its own technology and striking licensing arrangements with other software vendors. Earlier this month, Ottawa-based Corel announced it had signed a deal with Alpha Software in Burlington, Mass., to include Alpha's database in the upcoming suite. The word processor in the suite will be WordStar from Softkey International, Inc. in Cambridge, Mass.

Corel, which is known for bundling a plethora of features and technology into one application, will use its own code to provide the graphics and spreadsheet capabilities for the suite. It will draw on the spreadsheet function from its Corel 5.0 application and will offer a stripped-down version of its Draw application for the graphics component.

Market leader

Corel holds 67% of the high-end illustration market with its Corel 4 and 5 applications, according to International Data Corp. (IDC) in Framingham, Mass. Corel 3 commands more than half of the low-end illustration market.

Traditionally, suite vendors have become successful by leveraging an anchor application such as Lotus' 1-2-3 spreadsheet, Microsoft's Word and Excel or WordPerfect's word processor and offering upgrades to those anchor applications. But that tactic is not likely to work for Corel.

Joan-Carol Brigham, an analyst at IDC, said Corel's licensing agreements with WordStar and Alpha prohibit it from offering upgrades for the applications in the suite. In other words, WordStar and Alpha users will not be offered an upgrade to the suite.

Another problem with implementing this type of strategy is that only a fraction of corporate users buy a suite based on its graphics component. According to a study conducted by International Data Group last year, less than 25% of user sites contacted said they bought the suite based on the graphics applications. In contrast, more than 80% said they bought the suite based on the word processor or spreadsheet that anchored the suite.

So for a current Corel user, the new suite would represent a downgrade instead of an upgrade, said Elizabeth Wood, an analyst at Egeland, Wood & Zuber, Inc., a consultancy in Atlanta.

"Someone who is a professional graphics person is not going to buy this suite for the graphics capabilities," Wood said. "This is a business suite. Confusing it with a graphics buy is like confusing apples and oranges."

Corel's strategy is to carve out small unit, departmental sales within corporations and target the small office/home office market. Much like it does with its other applications, which are loaded with features, Corel also plans to bundle a number of value-added applications, such as an encyclopedia and dictionary, into the CD-ROM-based suite.

This approach will appeal to pockets of users within corporations who need only a handful of suites within their department, Wood said.

Corel can be expected to gain these pocket-size wins by offering suite capabilities, loaded with features, at a much lower price than the competition. According to IDC, the average price of a suite last year, when bought in a volume licensing arrangement, was $264. While Corel officials said they have not yet set pricing for the suite, it is expected to sell at a street price of less than $200, Brigham said.

Corel officials said they expect the suite will be finished before Windows 95 ships.

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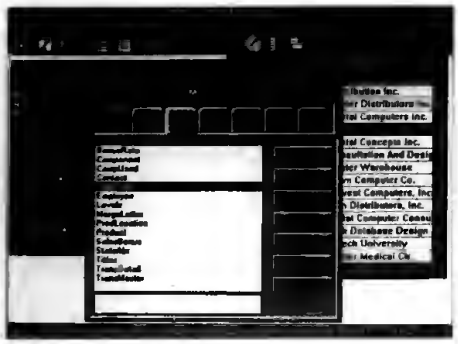
†For a complete copy of our Limited Warranties please write to Dell Computer Corporation, 2214 W. Broker Lane Bldg. 3, Austin, TX 78758. ‡Latitude system not tested. *Prices valid in the U.S. only. Some products and promotions may not be available outside the U.S. Prices and specifications subject to change without notice. Quotes excerpted from PC Computing January 1995 issue (pages 124-142). *Latitude is powered by a NiMH battery, with the option of replacing the diskette drive with a second NiMH battery. The Intel Inside logo is a registered trademark and IntelDX2 and IntelDX4 are trademarks of Intel Corporation. Dell disclaims proprietary interest in the marks and names of others. ©1995 Dell Computer Corporation. All rights reserved.

Microrim arrives late to Windows party

By Tim Ouellette

■ With the release of R:Base 5.0 for Windows, Microrim, Inc. has entered the Windows world and is beckoning loyal users to follow.

The Bellevue, Wash., company, which claims to have installed as many as 1 million copies of its R:Base PC database software for DOS, may have waited too long to get into the Windows arena, however. Larger database vendors such as Oracle Corp. and IBM are already making their presence known in the low-end marketplace [CW, Jan. 30], said Steve Hendrick, an analyst at International Data Corp. in Framingham, Mass.



Microrim's R:Base 5.0 for Windows *sports the same command order as the DOS version*

Too little, too late?

"The product needs a lot more than it has to capture the hearts of the development community," Hendrick said, referring to the product's lack of ground-breaking Windows features relative to similar offerings already on the market. "It may be a bit of a challenge."

"In my opinion they waited a little too long to go to Windows," agreed Scott Salisbury, an R:Base applications consultant at Matrix Data Systems in Seattle. "I have clients that won't use the product because it wasn't for Windows, and they won't come back until a Windows version is out there."

For Microrim to succeed, analysts said the firm must leverage its large installed base to sell lots of Windows upgrade packages as well as focus on generating more value-added reseller business in niche industries. "The best thing to do would be to head to certain vertical industries where they can reign supreme," Hendrick said. "That is the reality of the big guys moving down the food chain."

Microrim blamed its slow move to Windows on the lack of software tools to make the transition easier for its customers. Realizing that users may have adopted other Windows databases, the vendor said it hopes the familiarity, flexibility and ability of R:Base to handle huge amounts of data will bring former R:Base users back.

For users who want to make the transition slowly, a command line prompt feature and the command order remain from the DOS version. Salisbury said Microrim has learned from Borland International, Inc.'s mistake of making its Paradox for Windows product completely different from the DOS version, forcing users to completely relearn the product.

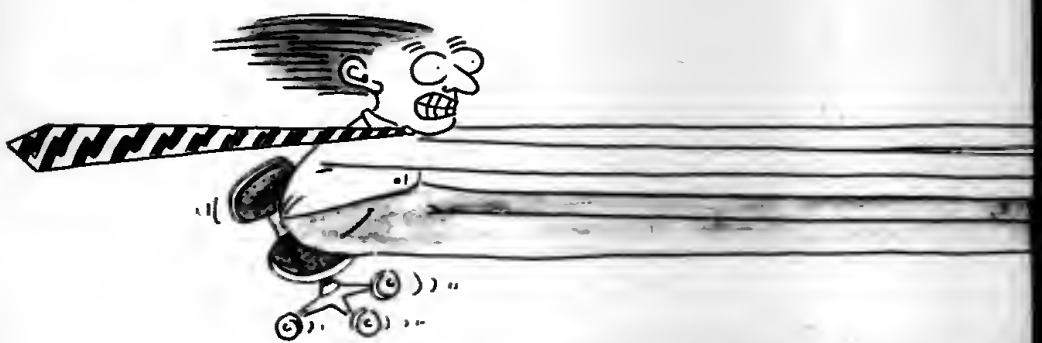
One DOS feature that has improved in the product's move to Windows is Application Express, a tool that lets users develop new applications without writing any code. Under DOS, this feature was cumbersome to use, Salisbury noted, but it has greater appeal under Windows because of the point-and-click capabilities.

Slick and quick

For users worried about speed losses with memory-hungry Windows, the performance of R:Base 5.0 for Windows is as good as the DOS version, according to Ken Hamermesh, vice president of BMS, Inc., a custom application development firm in Denver. "We brought up a database with a dozen tables — over 100,000 rows — and it ran the same under Windows as it used to under DOS," he said. "Also, their handling of image files now is pretty slick."

Hamermesh said he always liked the menuing capabilities of Rbase, which is likely to appeal to Windows developers too. "They have the potential to do fabulous things in the GUI environment doing menus," he said. "I don't think we'll have a full-blown menu control in the first version, but they have it in the works."

R:Base 5.0 for Windows is shipping this month and costs $495 for new users and $149 for an upgrade from DOS versions.



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IBM

CONTINUED FROM PAGE 39

WordPerfect plans to offer the same Windows migration capabilities for future versions of its other desktop applications. WordPerfect officials said they have no plans to port their new application suite, PerfectOffice, to the OS/2 platform.

> "It is clear that IBM is not expanding beyond its traditional base."
>
> *—Matthew Cain, Analyst, Meta Group*

Lotus remains

This decision leaves Lotus Development Corp. as the lone champion of the OS/2 application suite. However, even Lotus is not timing its application revisions with OS/2 deliveries. Although Warp shipped in November, Lotus officials said they would not deliver a new OS/2 suite for Warp until Windows 95 ships.

WordPerfect and other vendors are clearly responding to a market condition based on user disinterest in OS/2 applications.

WordPerfect's efforts underscore the domination of Windows applications even in the OS/2 camp, analysts said. In fact, a survey conducted by *OS/2* magazine found that 85% of OS/2 users run Windows applications on their desktops.

Downward rush

This is the case at Rush-Prudential Health Plans, a health care company in Chicago. As is the case at many sites, the number of OS/2 users at Rush-Prudential is dwindling.

And in what may expedite such departures, the health plan's IS department is trying to standardize on one desktop application platform, and it is not OS/2.

"We're trying to get these people off of OS/2 and on to Windows," said Faith Knott, manager of end-user computing at the company.

Another user at a major East Coast manufacturing company said that while some of his users would like to continue running OS/2, his concern over the lack of desktop applications is driving his site's migration to Windows.

LAN servers flourish; support in flux

CONTINUED FROM PAGE 39

agement systems — are only slowly beginning to mature. This is causing organizations to reevaluate local and central responsibilities for distributed resources, the IDC report said.

For example, at West Bend Mutual Insurance Co. in West Bend, Wis., all PC and LAN server support functions are carried out by a microcomputer support department within a central IS authority. According to Gary Richtmyre, microsupport manager at the company, IS makes the purchasing decisions and provides the support.

"If users have a problem they call the help desk," which is part of IS, he said.

Set policies

To help make sense on the server side, IS organizations are doing something they have done for a long time with PCs: setting standards and buying from vendors on "approved" lists. In the IDC study, some 80% of respondents said they have standards in place.

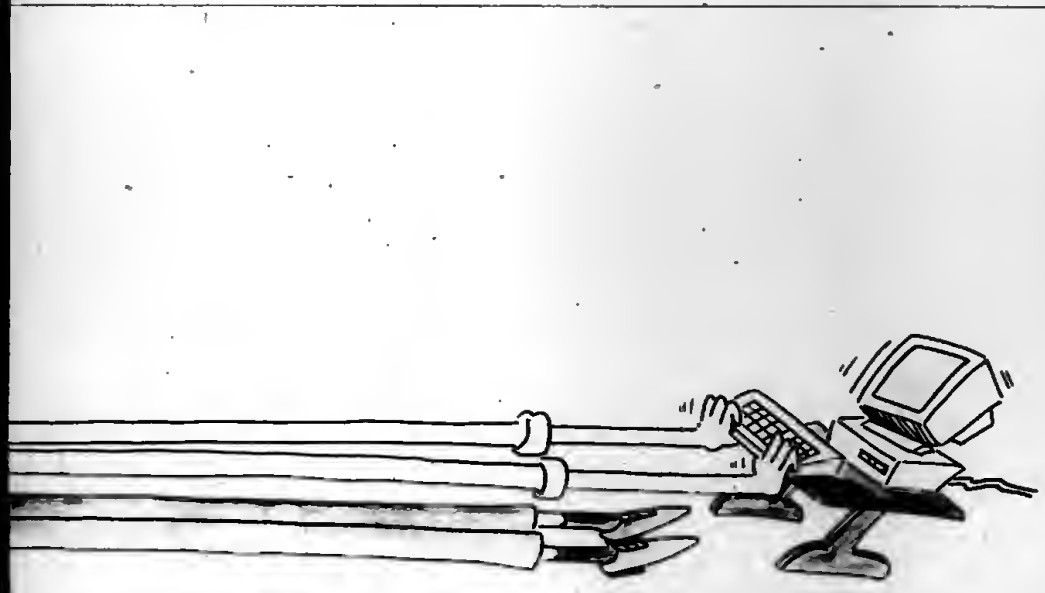
At W. B. Saunders Co. in Philadelphia, for instance, while each of the business departments has had a lot of autonomy in deciding hardware requirements and even contracting out for PC support if needed, the actual choice of hardware and software goes through central IS for final approval. Users can recommend what they want, and even specify it, but IS still has to approve it.

"We are doing this so that there is some sort of standards within the company," said Peter Prellwitz, microcomputer support specialist at Saunders.

Saunders, which has an almost exclusively standalone environment, is moving to a distributed network environment. When the firm gets there, it wants to make sure it has a homogeneous hardware and software base, Prellwitz said.

Help is on the way

About 90% of the companies in a recent IDC survey indicated that they have a help desk to support PC users. The ratio of desktop users to help desk person varied from 40-to-1 to 600-to-1, an average of 225-to-1 after extreme cases were eliminated. IDC said that how well these ratios work depends on factors including the skill levels of the staff, the degree of help desk automation and the levels of support offered.



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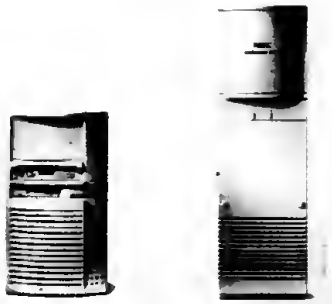

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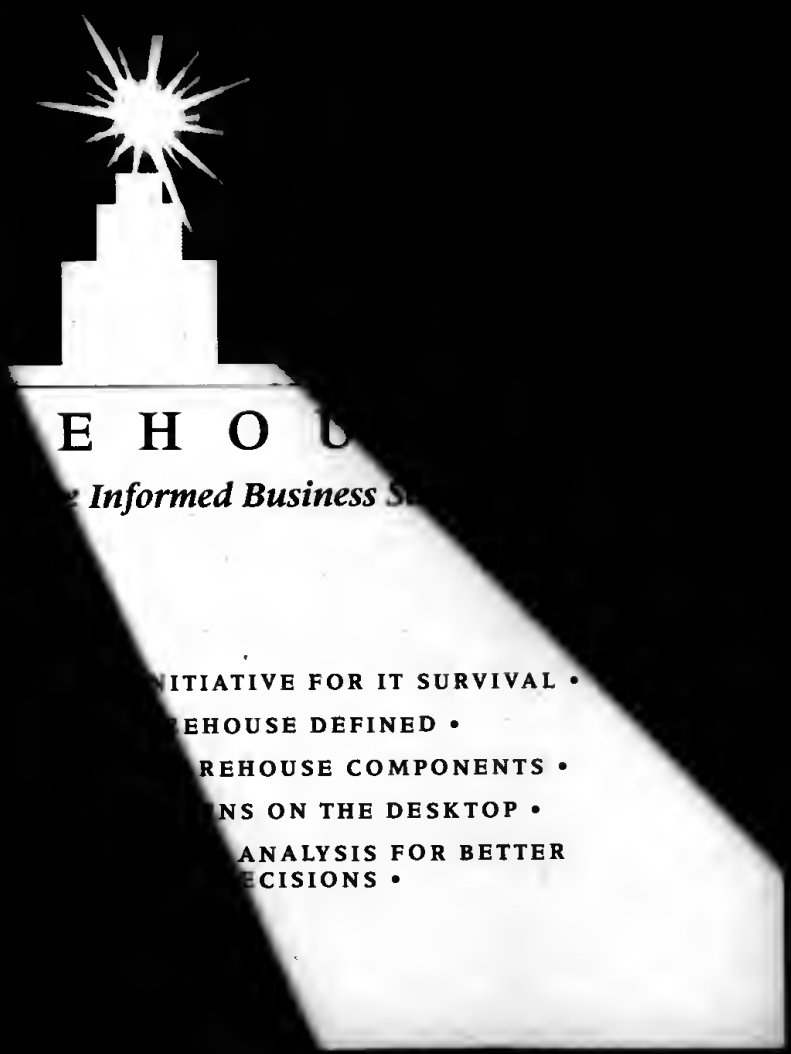

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META Group, February 1994 Client Survey

"More than 90 percent of our Fortune 2000 clients indicate they will be pursuing a data warehouse strategy in the next three years."

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W.H. Inmon, "Building the Data Warehouse"

"In the data warehouse environment, the question is not whether...data will be partitioned but how...data will be partitioned."

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A Mandatory Initiative for IT SURVIVAL

By Aaron Zornes

IT organizations are under tremendous pressure to provide better quality decision-making information in forms easy to access and manipulate. Business users are reacting to their own mission-critical needs for better information due to rapidly changing, increasingly volatile and competitive markets, as well as ever-shortening product life cycles.

A 1994 survey of IT managers at Fortune 2000 enterprises by META Group found that more than 90% were planning to implement data warehouses between 1994 and 1996. With shrinking IT budgets, the impetus for implementing a data warehouse comes either from line-of-business management, who are championing these next-generation decision support systems, or from IT organizations who believe the investment will provide major, demonstrable near-term payback. META Group believes it is both.

DATA WAREHOUSES PROVIDE AN IT COMPONENT THAT IS INCREASINGLY CRITICAL FOR SUPPORTING THE TEMPO OF BUSINESS COMPETITION.

Why is data warehouse one of the hottest industry trends? Simply stated, enterprises must become more competitive and get closer to their customers to survive. Unfortunately, much of the data maintained by enterprises about their customers is locked up in data "jailhouses" — databases which have evolved as discrete independent subsystems. These databases are unable to provide the enterprise a consolidated view of who the customer is, or even what services and products are correlated across the customer base.

The data warehouse is a blend of technologies, including relational and multidimensional analysis, client/server architecture, graphical user interfaces, powerful meta data modeling and more. These technologies combine to enable the integration of multiple operational databases into a single database designed specifically for analytical processing, such as decision support. The resultant "subject-oriented database" is designed with end-user access in mind.

The business value of data warehouses can be summarized as follows:

- **More cost-effective decision making.** The elimination of staff and computer resources required to support ad hoc inquiry and reporting against operational/production databases offers significant savings.

This also eliminates the so-called "MIP-o-suction" factor of executing long-running, complex queries against production databases designed specifically for short, simple transactions. Profitability analysis is also a key benefit of being able to correlate combinations of products and services with marketing initiatives and external on-line business demographic databases.

- **Better business intelligence.** Increased quality and flexibility of market analysis arises from multi-tiered data structures which may range from detailed, transactional level to high-level summary. This bypasses application-specific databases, which foster distrust because of their differing versions of the truth. The ability to discern "how many" of "which products" are actually sold into a given household address is key to identifying cross-marketing opportunities.
- **Enhanced customer service.** A total customer relationship can be established if all customer information is correlated via a single data warehouse.
- **Enhanced asset/liability management.** Purchasing agents and other financial managers would benefit greatly if they could ascertain the big picture of enterprise-wide purchasing and inventory patterns. In doing so, the financial managers often discover cost savings hidden in redundant inventory, as well as previously unknown volume discount opportunities.
- **Business process reengineering.** Providing business users unlimited analysis of their business information often provides insights into the work processes themselves, which will yield breakthrough ideas for the reengineering of those business processes.
- **Alignment with corporate downsizing objectives.** Distributed decision support is increasingly mandated by enterprise rightsizing as organizational restructuring further distributes decision-making responsibility.

Throughout 1995 and 1996, META Group analysts believe the majority of corporate IT organizations will reengineer systems via data warehouse architectures and initiatives, in combination with relational databases and multidimensional on-line analytical processing. Whether by providing marketing insights, opportunities for cost savings or volume discounts, data warehouses provide an IT component that is increasingly critical for supporting the tempo of business competition.

Zornes, an international authority on data warehousing, is senior vice president for Application Development Strategies at META Group, a leading retainer-based IT consultancy based in Stamford, Conn. He has worked with numerous Fortune 2000 IT organizations in the architecture, design and implementation of their corporate data warehouses, and has spoken on data warehousing at major IT conferences around the world.

DATA WAREHOUSE DEFINED

By W. H. Inmon

The movement away from the classical legacy application environment to the informational enabling, data warehouse concentric environment is inevitable. The inadequacies of the legacy environment are such that the question is no longer whether an organization will move to the new information paradigm — but when.

With this movement comes the question: What exactly is a data warehouse environment and how does it work?

The data warehouse is designed to serve the information needs of the entire organization. To accomplish this, it stores data at different levels of granularity — from current detail data to highly summarized data. As a rule, the more current the data, the more immediate its use. Typically, current detail data supports day-to-day decisions, while historical data supports trend analysis and long-term decisions.

One of the requirements of the data warehouse environment is the ability to accumulate and manage large amounts of data. Therefore, it is important to properly choose levels of granularity and summarization for the data in the warehouse. Other design approaches and techniques to consider for managing large amounts of data in the warehouse include: storing data on multiple storage media, summarizing data when detail becomes obsolete, storing data relationships in terms of artifacts, encoding and referencing data where appropriate, and partitioning data for independent management and indexing.

What follows is a primer on the role of each of the structural elements that make up a data warehouse architecture (see figure on page DW6):

• **Current detail.** The heart of the data warehouse environment is the current detail data. It is the place where the bulk of the data resides, and it is often stored on a parallel processor. Current detail data is fed directly from the operational, legacy environment, and it represents the entire corporation, not a given application. Current detail data is organized along subject lines.

Every unit of data in the current detail can be thought of as a snapshot, where one unit of time identifies the moment at which the snapshot is accurate. Current detail represents the lowest level of granularity of data found in the data warehouse environment. It may be stored as raw data or as a profile — which represents an aggregation of raw data. Current detail is typically two to five years old. It is refreshed as frequently as required by the environment, be it daily, weekly or monthly.

• **Old detail.** The old level of detail is where archival data, or data typically older than two years, is stored. There is usually a massive amount of data stored at the old detail level and a low probability of access. Old detail is at the same level of granularity as current detail. Data can be aggregated or profiled in order to condense it as it enters the old level of detail. Old detail typically contains many versions of the same data structure, because the data structure changes over time. It can be stored on a variety of media.

• **Departmental/data mart.** Lightly summarized data is the hallmark of the departmental element of the data warehouse. The departmental level is customized to suit the needs of the department owning the data. The customization is done as the data passes from current detail to the departmental level; the departmental level is fed exclusively by current detail. There is much less data in any given departmental database than there is in current detail. The departmental level contains both detail and summary data. The process of summarization as the data passes into the departmental level is an important piece of meta process. The departmental level of data comfortably uses relational technology to perform multidimensional analysis.

DATA IN THE DATA WAREHOUSE IS STORED AT DIFFERENT LEVELS OF GRANULARITY SO IT CAN SERVE THE INFORMATION NEEDS OF THE ENTIRE ORGANIZATION.

• **Highly summarized data.** The highly summarized level of data in the data warehouse environment is

Inmon, co-founder and executive vice president of technology at Prism Solutions, based in Sunnyvale, Calif., is credited as the father of the data warehouse concept. He has more than 25 years' experience in database technology management and data warehouse design, and has spoken at computing conferences around the world on developing data warehouses.

designed for executive management, and should allow access of increasing levels of detail through a drill-down process. The highly summarized data comes from either the departmental level of data or the current detail level. The data volume found here is much less than at other data warehouse levels, and represents an eclectic collection, supporting a wide variety of needs and interests.

• **System of record.** In the initial stages of building a data warehouse, the system of record is data found in the applications which feeds and supports the data warehouse. The system of record should always represent the "best" data that a corporation has, where "best" is defined as data that is the most timely, complete and accurate, has the best structural conformance to the integrated data model, and resides the closest to the source of entry into the operational environment. The system of record data is by no means perfect, though. As it passes into the data warehouse it undergoes significant editing, cleansing and reformatting.

• **Integration/transformation programs.** As data passes from the system of record into the data warehouse, it travels through a set of integration and transformation programs, which turn application-specific data into corporate data. These programs perform functions such as reformatting, recalculating, modifying key structures, adding time elements, identifying default values, supplying logic to choose between multiple data sources, summarizing, tallying, and merging data from multiple sources. The integration and transformation programs need to be modified each time the operational environment or the data warehouse environment changes.

The final element of the data warehouse environment is **meta data** — or data about data. It resides at all levels of data within the data warehouse, but exists and operates in a different dimension than does other warehouse data. For this reason, meta data is often taken for granted and/or misunderstood.

Meta data is one of the most important aspects of the data warehouse environment. It exists at both warehouse development and end-user application levels. Meta data is used by the data warehouse developer to manage and control data warehouse creation and maintenance. For end users, meta data resides on the data warehouse platform itself and is available as a regular part of the access and analysis of the warehouse.

Balancing end-user needs and IS control is hard enough without some software tool putting its own spin on your data access...

UNDERSTANDING

Meta Data's Key Role

Meta data is very much an integral, vital part of today's information environment. To understand why, consider the following example You go home and your teenager asks for help on a school report on early Native American life in New Mexico. You know little on the topic so, teenager in tow, you head for the library to find relevant books. You go straight to the on-line card catalog because looking sequentially through the stacks would take too long.

Like the library, your corporation is large, complex and filled with information types. Suppose you are asked by your boss for a report that analyzes product cost vs. revenue for your five top product lines over the past five years. In addition, your boss wants you to factor in competitive announcements and economic conditions. Where do you start?

To enable your company to become a first-class information organization, you need a corporate card catalog, and it is meta data that fulfills this need. Changes in the world of information systems have made meta data much more critical today than it was in the past. The increasing size of information systems has fueled much of the need for organizing data efficiently so it can be located quickly. Additionally, in years past the IT world consisted only of operational processing and operational data. Today, with the addition of informational processing and informational data, the world has become infinitely more complex.

TO ENABLE YOUR COMPANY TO BECOME A FIRST-CLASS INFORMATION ORGANIZATION, YOU NEED A CORPORATE CARD CATALOG, AND IT IS META DATA THAT FULFILLS THIS NEED.

In the past, the user of meta data was the IT professional, who was technologically proficient in gaining access to this data. Today, the primary user is typically a decision maker, who is first a business person, and second a technician — if at all. As a result, the decision maker needs as much technical support as possible and comes to depend on the meta data "card catalog" as the tool of choice.

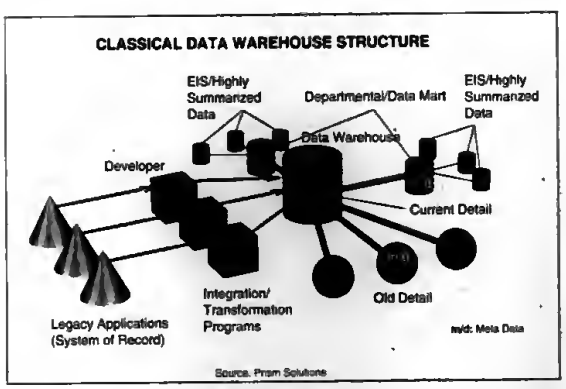
Time is another dimension of information processing that makes meta data management mandatory. It is typical to contain five to 10 years of data in the data warehouse, unlike the operational environment which contains almost exclusively very current data — typically 60 to 90 days old.

What are the implications of storing a lengthy time period of data such as that found in the data warehouse? The first is that the volume of data will be large; the second is that the structure of data will change over time. How a customer or product file is defined today will not be how it is defined in 10 years. As long as the business is growing and thriving, its information structure will change.

Over a 10-year period, many structural changes will take place, and it is meta data that will track these changes. The corporate card catalog acts as the container for storing the history of changes in meta data.

TOOLS MEET THE CHALLENGE

As the importance of meta data has grown, so too have vendors' responses with greatly enhanced tools for managing meta data. In years past, meta data management tools centered around data dictionaries and repositories. Using modern meta data management tools, the data warehouse development process is tightly integrated with meta data management. In fact, using some vendors' tools, meta data management and warehouse development become one and the same, eliminating the need to cost justify a separate project.



As the developer builds the data warehouse, he or she is not aware that anything special is happening with meta data. Once the data warehouse is completed, however, meta data automatically becomes available to end users. By marrying the development environment to the meta data management environment, a handful of important goals are accomplished. These goals include the automatic, accurate and complete capture of meta data. Keeping meta data current also becomes automatic. In short, the modern tools have made the promise of meta data a reality.

To realize this promise, meta data management for the data warehouse environment has some unique requirements. There are distinct types of meta data that should not be mixed in the data warehouse environment because they serve different purposes.

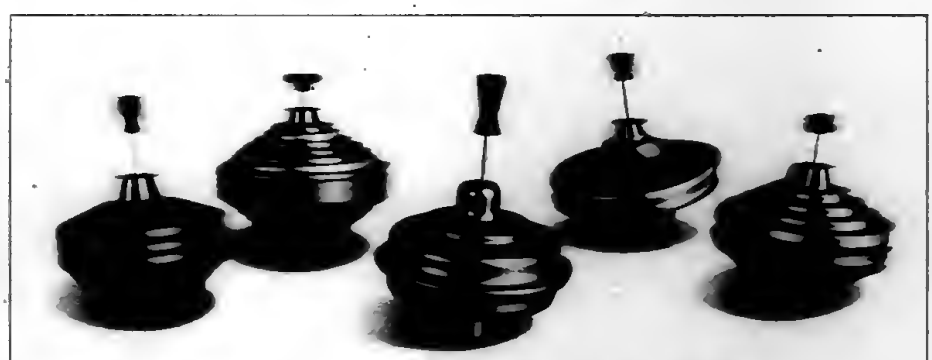
Development meta data resides outside the data warehouse and is used by developers to create and maintain data warehouses. Requirements include the following:

- Meta data must be versioned to capture its changing history
- The structure and content of the data warehouse needs to be stored
- The system of record (or source, usually the legacy applications) for the data warehouse needs to be clearly and formally identified
- The integration and transformation logic that moves the data from the operational environment to the data warehouse environment must be made available as a regular part of the data warehouse meta data
- The history of refreshment needs to be stored as a part of the meta data so the end user knows the currency of the data
- Metrics need to be stored so the end user can determine whether a request will be a large or small one before the request is submitted.

End-user application meta data resides in the data warehouse and is used as a dynamic link between the data warehouse and end-user applications. Some meta data can be made directly available to the end user, such as information about the original source of the data in the warehouse. Business terms, in addition to systems terms, need to be available to the end user for this purpose. Other meta data is used by applications to form intelligent queries and contain analytic rules. The various forms of meta data should include the following:

- Location and description of data warehouse servers, databases, tables, names and summarizations
- Rules for automatic drill up, down and across business dimension hierarchies, like products, markets and charts of accounts
- End-user defined custom names or aliases for the more technically named data headings and facts
- Rules for end-user defined custom calculations
- Personal, workgroup and enterprise security for viewing, changing and distributing custom summarizations, calculations and other end-user analytics
- Descriptions of original data sources and transformations.

In summary, meta data management is key to a corporation's successful use of its data warehouse environment. The more it is understood and its role appreciated, the more corporate value it will yield. ❖



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DHL Worldwide Makes Warehousing Work

DHL Worldwide moved to a data warehouse environment to house an integrated information system that would satisfy its need for faster, more flexible data delivery.

DHL Worldwide Express, the world's leading international express delivery service, moves hundreds of thousands of packages through 14 major international hubs every day, servicing customers in more than 220 countries. That makes data management a critical issue for DHL.

Adding to the challenge is the fact that DHL operates as a completely decentralized organization. Operations in each of its regions and countries are independent and each implement their own IT services based on global standards and infrastructure.

This decentralized data environment made worldwide reporting and analysis a challenge. Files from 188 costing areas in a variety of formats had to be painstakingly reconciled and merged to build a single view of all the information.

In addition, corporate customers depend on DHL to track their costs and service levels, because the diffusion of shipping activity across offices and departments makes it difficult for them to do so on their own. Customers expect DHL to be able to give them a precise accounting of how they've spent their money and what they've received in return.

But without a data warehouse, that type of report was the one package DHL couldn't easily deliver overnight.

PUTTING IT TOGETHER

Impetus for the warehousing project was initially created by a request for an integrated information system at DHL's Worldwide Coordination Centre in Brussels, Belgium. Discussions with users pointed up the diverse ways different people wanted to correlate and view data. Both this need to slice data in different ways and the fact that the global IT team couldn't dictate any changes in the way each region and country ran its own operations led to the decision to build a data warehouse.

"We had to take the data as it was provided to us and work with that," says Dee Copelan, a member of the team that spearheaded the data warehousing project at DHL Systems in Burlingame, Calif. Copelan found that bringing in business managers added an extra dimension to the project. "They were the ones who could look beyond the way things were and tell us what they'd really like to see," she says.

Copelan cautions against the urge to do too much, though. "We originally planned to integrate data from five applications into the warehouse," she says, adding that they eventually scaled the first phase down to two applications. Copelan says that the integration of data from the two applications — marketing and costing — provided plenty of benefits.

She also feels confident that the flexibility of DHL's data warehousing approach will let them add other data sources incrementally as required. "With a data warehouse, it's more important to show results quickly and then respond to user feedback," she says. Copelan sees data warehousing as providing useful diagnostics because it helps make data logically consistent. "It really highlights problems in the corporate information environment, such as when different groups define terms differently," she says.

For DHL, data warehousing means that reports based on data from worldwide operations can now be generated in hours instead of days. And since users don't have to spend their time cleaning up data and massaging files, they can now address the kind of in-depth business analysis that delivers real value to the organization. What it means for DHL is that it can now better correlate information about cost and revenue variables in different countries and take appropriate action.

Perhaps most importantly, global account managers can now present their customers and prospects with accurate, good-looking reports in a timely fashion. "That ability alone goes a long way to justifying the cost of the project," says Copelan. "We've provided a new marketing tool to help DHL land and keep the global customers we're targeting."

DEMYSTIFYING

Warehouse Components

By Colin White

End users today need to be able to easily access and analyze corporate data for business decision making. One approach that is gaining increasing acceptance is a data warehousing system in which business users are given access to an integrated informational warehouse database. This data warehousing system is constructed by extracting and integrating data from existing operational systems as well as from external information providers.

To be successful, a data warehousing system must be easy to set up, manage and use. It is important, therefore, to understand its objectives and requirements, and determine how well vendor products satisfy the needs of data warehouse designers, administrators and business users.

The key components of a data warehousing system (see figure on page DW12) include the following:

- Definition component for defining and setting up the data warehouse environment
- Data acquisition component for copying data from source files and databases to data warehouse databases
- Management component for managing data warehouse operations
- Data distribution component for exporting warehouse data to external systems
- Information directory component for providing information about the data stored in warehouse databases
- DBMS component for managing, maintaining and accessing warehouse data
- Data access and analysis component for providing business end users with the tools they need for accessing and analyzing warehouse data.

DEFINITION COMPONENT

The definition component is used by warehouse designers and administrators to: a) design and define the data warehouse databases, b) define the data sources from which the warehouse data will be obtained, and c) specify the rules that define the data cleanup and enhancement to be done when copying data from source systems to the data warehouse databases. The output from this component is stored as meta data in the information directory component.

DATA ACQUISITION COMPONENT

One of the key objectives of a data warehousing system is to put corporate data in a form that the business user can easily understand and use. The data acquisition component does this by extracting data from source systems and cleaning and transforming it, based on the rules defined by the definition component. Cleanup may require the restructuring of records or fields, removal of operational-only data, decoding and translation of field values, the supply of missing field values, or the checking of data integrity and consistency. Transformation may involve adding a time field (if one is not present in the source data) to reflect the currency of data, data summarization or the calculation of derived values. Once the source data has been cleaned and transformed it is mapped to the target warehouse databases, transported to the data warehousing system, and loaded (or updated) into the appropriate warehouse databases. The loading (or updating) of the warehouse databases is done using SQL (assuming a relational DBMS is being used) or a database load utility.

THERE IS MUCH MORE TO DATA WAREHOUSING THAN JUST COPYING OPERATIONAL DATA INTO A SEPARATE INFORMATIONAL DATABASE.

There are four main types of products that support data acquisition:

- **Code generators** create tailored data acquisition programs. The objective of these products is to generate tailored 3GL copy programs based on the data structure definitions, as well as on the cleanup and transformation rules defined by the definition component. This approach reduces the need for an organization to write its own 3GL copy programs, and has the benefit of providing more data transformation power than that provided by generalized copy utilities and data replication tools.
- **Data replication tools** capture changes to a source database on one system and apply the changes to a

White is president of DataBase Associates International, an IT consulting firm based in Morgan Hill, Calif., and editor of InfoDB, *a technical journal on client/server computing and data warehousing. He is also conference director for DB/EXPO, a national database and client/server exhibition and conference*

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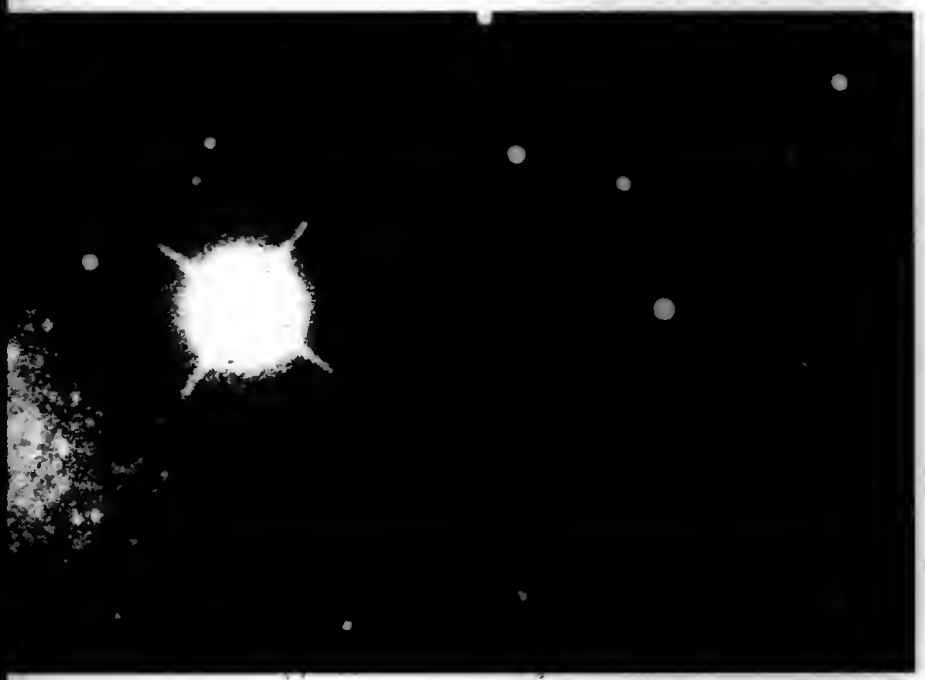

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copy of the source database on a different system. These replication products rarely support the copying of data from nonrelational files and databases, and often do not provide facilities for significant data cleanup and transformation. Replication products can also be used to propagate data changes from a central data warehouse to decentralized warehouse database servers.

• **Generalized copy utilities** bulk-copy data from a source system to a target system. The focus of these products tends to be on the high-speed transfer of data, rather than on data integration, cleanup and transformation. Rarely are these products appropriate for data warehousing environments where there is a need to integrate and reformat data from multiple nonrelational operational files and databases.

• **Database gateways**, as a rule, focus on providing workstation end users with access to operational (or data warehouse) databases. This approach is often used as an alternative to building separate data warehouse systems, since it gives the user direct access to operational data. The disadvantages are that the operational data is frequently not in a form the user wants, summaries have to be built on the fly (increasing processing overheads), and historical information is not available. Another disadvantage is that SQL remains the access language used to retrieve data, and this limits the amount of data transformation that can be done during retrieval. In addition, complex SQL manipulation of nonrelational data has poor performance characteristics.

A KEY BENEFIT OF THE INFORMATION DIRECTORY IS THAT IT HELPS BUSINESS USERS UNDERSTAND WHAT INFORMATION EXISTS IN THE WAREHOUSE AND HOW TO ACCESS AND USE IT.

There are many approaches to acquiring data and copying it into a data warehouse system. The direction of the industry is to use a mix of code generators and data replication tools.

MANAGEMENT COMPONENT

The management component consists of a set of services for use by other warehouse components, and for managing warehouse data collections. A data collection is a set of data of interest to a specific user or group of users. Data collections are derived from the base data created by the data acquisition component. The services provided by the management component include a data maintenance service for deriving new data collections from warehouse base data and a distribution service for exporting warehouse data to decentralized warehouse database servers and other end-user decision support systems. The management component also provides services for handling the security, archiving, backup and recovery, and monitoring of base data and data collections. Often these latter services employ the facilities provided by underlying operating system and database software.

To be effective, a data warehouse must be easy to set up and use. Vendor support of the above components varies widely, so users must be discerning in their review of product solutions.

INFORMATION DIRECTORY COMPONENT

The information directory component of a data warehouse contains information (known as meta data) about the data in the warehouse databases. A key benefit of the information directory is that it helps business users understand what information exists in the warehouse and how to access and use it.

The three main elements of the information directory are the technical directory, the business directory and the information navigator.

The **technical directory** contains information about warehouse data for use by warehouse designers and administrators. It has information about data sources, targets, cleanup rules, transformation rules and mapping between data sources and the warehouse databases. Most of the information in the technical directory is created when the warehouse designer defines the data sources and targets, as well as the rules to be applied when copying data into the warehouse. It may also be imported from an external system, such as a 3GL copybook library, DBMS system catalog or CASE tool.

Information about the amount of data in the warehouse and the date it was created or updated should also be stored in the directory. Ideally, this information should be collected by the tools employed to acquire data from the source systems and delivered to the warehouse databases. Information about how end users access and use warehouse data should also be trapped and added to the technical directory to enable designers and administrators to tune and enhance the

data warehouse.

The **business directory** contains information that gives end users an easy-to-understand view of the data in the warehouse. This information includes:

- The business terms and associated technical names and aliases used to access warehouse data
- The source of warehouse data, derivation rules and currency of the data
- Contact information about the owner of the data
- Details about predefined queries and reports
- Authorization requirements.

This business information is usually created by the warehouse administrator, but it may also be imported from external systems, such as a CASE tool, or a query and report writing tool.

The **information navigator** provides end users with easy access to the business directory and warehouse data. The navigator should provide the following:

- A query and navigation facility to access and drill down through information in the business directory
- The ability to create temporary or permanent warehouse data collections using canned queries or by building new queries via an access assistant
- A communications facility to send new data acquisition requests to the warehouse administrator
- A facility to send a request to the data distribution component to export an existing warehouse data collection to another data warehouse or external system
- A seamless interface to the data distribution and data access components.

To date, vendor support of the three components of the information directory has been limited. Some major developments in this area are under way, though, which will become available to users this year.

As data warehousing use grows, an integrated information directory facility with a business directory and associated information navigators will become essential for end users to fully exploit the data warehouse's power. This capability will become a key distinguishing factor between data warehousing products.

DBMS COMPONENT

The DBMS component consists of the database software used to maintain and retrieve warehouse data. Two key considerations when choosing a database product for a data warehousing system are scalability and performance. Once the value of the warehouse is recognized, the warehouse databases tend to grow very quickly, making it critical that the DBMS be highly scalable. And since the warehouse databases can involve many gigabytes of data, the database products must be able to provide fast performance when processing data in these very large databases.

To solve performance problems when loading, accessing and analyzing large amounts of data, vendors are introducing parallel processing database products that exploit the huge amounts of computing power provided by symmetric multiprocessor and massively parallel computer systems. Of key importance here is the ability of the database product to process queries in parallel, and the availability of utilities that perform database administration tasks such as database loading, backup and recovery, and index building in parallel.

DATA ACCESS AND ANALYSIS COMPONENT

Data access and analysis constitutes the remaining data warehouse component. It provides the tools that let users explore and analyze the data warehouse, allowing them to improve decision making and gain competitive advantage. These tools can range from query generation tools to multidimensional products for complex data analysis, to data mining tools that let users drill down through warehouse data.

WAREHOUSE DATABASES TEND TO GROW VERY QUICKLY, MAKING IT CRITICAL THAT THE DBMS BE HIGHLY SCALABLE.

CHOOSING THE RIGHT PRODUCTS

Vendor support of the above components and requirements of a data warehousing system varies widely, and the following list summarizes some key factors that can be used to distinguish between their products. Look for the following:

- Source database and file systems supported
- Target warehouse database systems supported
- Operating platform and GUI supported by definition component
- Data cleanup and transformation capabilities
- Methods used to maintain warehouse databases (data refresh vs. data update; SQL manipulation vs. database load utility)
- Facilities for importing/exporting meta data from/to external sources
- Amount of manual intervention required during data warehouse operation
- Facilities (if any) provided by the information directory, data distribution and management components
- Amount of 3GL code generation (if any) by the data definition component
- Support for database products that provide parallel query and parallel utility operations
- Support for data-analysis and data mining tools
- Ability to scale to large numbers of users and large databases.

There is much more to data warehousing than just copying operational data into a separate informational database. A data warehousing system should provide a complete solution for managing the flow of information from existing corporate databases and external sources into end-user decision support systems.

Nor is this enough. Data warehouse tools and facilities must make it easy for business users to find out what information exists in the warehouse and then be able to access and manipulate that information. Without it, the data warehouse developer can build it, but business users will not come. ■

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Quantify

By Douglas Hackney

Both information technology and marketing managers are often at a loss to measure and monitor return on investment (ROI) for their programs and technologies. Desktop query and reporting tools provide the means for both groups to realize this elusive goal, as well as to improve ongoing programs and processes.

IT organizations have long fought the battle of selling new technologies with only nebulous promises of increased productivity or cost savings. All too often these productivity and efficiency metrics have proven difficult, if not impossible, to quantify. Similarly, marketing organizations have been at a loss to provide ROI evaluations of individual marketing programs.

Modern graphical user interface (GUI) database query and reporting tools have revolutionized access to enterprise information. Properly utilized, these same query and reporting tools are capable of providing both IT and marketing organizations with ROI analysis of their programs.

Most organizations have deployed, or are in the process of developing, data warehouses to improve access to enterprise data resources. They also have implemented GUI query and reporting tools to provide quick and easy access to these new resources. Why then have so few leveraged these assets to deliver the ROI measurement they so earnestly seek?

The answer lies in what I term the "Mandate Gap."

THE MANDATE GAP

Between the typical IT organization and the typical marketing organization lies a gulf that extends beyond functional roles. Each has a clearly defined mandate. Unfortunately, the lack of an overall view as to how these differing missions can coexist and cooperate is oftentimes overlooked.

A COMPREHENSIVE QUERY AND REPORTING TOOL WILL ACCOMPLISH THE MANDATES OF BOTH IT AND MARKETING.

The mandate of IT organizations regarding decision support systems (DSS) is generally regarded as "store and report" the data. This mandate is reflected in the specifications used to evaluate and implement query and reporting tools, which generally call for querying and reporting the data. These two requirements are usually expressed as "increasing the speed of information flow" and "reducing infrastructure (manpower) reporting requirements."

Marketing's mandates, on the other hand, are generally held to be 1) find new business, 2) retain and expand market share, and 3) justify your existence (show ROI for your programs). A query and reporting tool that merely provides data access and reporting may help find new business, but has little impact on marketing's other mandates.

A comprehensive query and reporting tool will accomplish the mandates of both IT and marketing, and provide a method for measuring and improving ROI. To realize these benefits, the tool must fully exploit the three "big wins" of desktop data access and reporting.

EXPLOITING THE 'BIG WINS'

There are three "big wins" that derive from the use of desktop query and reporting tools:

1. Desktop point-and-click access and reporting of enterprise data. Direct user access to data warehouses leads to many benefits, including reduced IT reporting resources, reduction in cycle time for information flow (users get answers in minutes instead of days or weeks), and better user understanding of enterprise information resources.

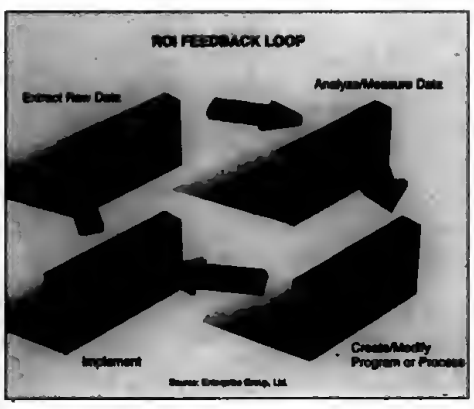
2. Returned answer sets are in native desktop form. This allows users to quickly and easily replicate and distribute information among common desktop tools. Data sharing technologies such as Publish and Subscribe on the Macintosh platform and OLE (Object Linking and Embedding) on the Windows platform allow systemic distribution of data globally with the push of a button. This represents powerful capabilities that can revolutionize workflow and cross-functional information exchange.

3. Programs and processes are created, implemented and monitored from the desktop. When users have access to the data and can easily utilize tools to share and analyze it, they quickly transform the raw data into meaningful information. The next direct step is to derive and define the need for programs and processes.

Once these programs and processes are implemented, users find they have the tools and capabilities to monitor them from the desktop. Data integrity processes can be evaluated; marketing programs can be monitored in near real time to determine impact. Feedback is immediate and direct to the desktop.

ing Gains

It is this ever narrowing focus on the goal that reveals the true power and potential of desktop access to enterprise data. A feedback loop is created (see figure below) in which business metrics are evaluated and a program or process is initiated, which drives a delta in business metrics. The delta is then evaluated, the program or process is improved, the metrics are evaluated again, and so on.



It is only upon full implementation of the third "big win" that ROI measurement of technologies and programs becomes possible. Full implementation requires specific, robust capabilities, which include the following:

• **Accessible, timely and accurate data source.** A data warehouse is the source of choice due to its integrated, timely and structured nature.

• **Easy accessibility to meta data.** IT developers, database administrators, analysts and program managers will be interested in the technical meta data, such as an impact analysis on a field change in the source data. Users' meta data needs can be distilled into two basic questions: "Where do I . . .?" and "How do I . . .?"

The systemic creation and maintenance of meta data is one of the greatest benefits of automated data warehouse creation and management tools. Manual creation and maintenance is very resource intensive.

• **Desktop, GUI data access.** The query and reporting tool will be the primary interface between the user and the data warehouse. To most users, in fact, the query and reporting tool becomes the identity of the entire program. Consequently, that tool needs to be robust, capable, flexible, and present an attractive face. In general, anything beyond the desktop will be invisible to users.

THE SYSTEMIC CREATION AND MAINTENANCE OF META DATA IS ONE OF THE GREATEST BENEFITS OF AUTOMATED DATA WAREHOUSE CREATION AND MANAGEMENT TOOLS.

• **Managed query environment (MQE).** Successful implementation of end-user data access requires putting a structured layer of protection between users and the data that is created by people with an understanding of the data and its business rules. The environment that is supplied to users needs to provide all necessary joins, security and structure as an inherent part of its paradigm.

• **Open data exchange.** To transform raw data into meaningful information users must be able to easily share the data they extract from the data warehouse with other desktop tools. The query and reporting tool must easily support the clipboard, writing common file formats, flexible file delimitation, and automated data transport to other tools via DDE (Dynamic Data Exchange), Publish and Subscribe, OpenDoc or OLE.

• **Data analysis.** Users must be able to quickly and easily analyze the data they extract from the data warehouse. Users will require sorting, summarization, charting, a flexible cross tab engine and, to a lesser extent, statistical analysis.

• **User-created data sets.** To create, monitor, and measure programs and processes from the desktop, users must have the capability to create and integrate their own data sets on the server.

Having a set of users that can measure the ROI of their programs from the desktop with no outside support creates a significant asset when it comes time to calculate IT's ROI for implemented or proposed technologies. The ability to list users' ROIs that were possible as a result of IT's technology choices is a powerful and persuasive argument for current and future investment.

Hackney is president of Enterprise Group, Ltd., a consulting firm specializing in data warehouse information delivery systems. He can be contacted via E-mail at hackneyd@ix.netcom.com.

GTE Empowers Decision Makers

"I need a complete report on Hispanic households with a median income of less than $40,000 that generated more than $50 per month in telephone toll revenue during the third quarter of 1994."

That's exactly the kind of information a product manager needs to determine the viability of a new service or product offering. It's also the kind of query that might have taken GTE Corp.'s GTE Telephone Operations unit weeks to execute. Data from a variety of different sources would have to be accessed, integrated and reconciled. And, in the end, all that work would have been done to satisfy a single request.

But no more. GTE's business managers can now get information requests answered fast because their enterprise data warehouse allows them to draw from a variety of disparate data sources. That's not only convenient, it's essential in the intensely competitive world of telecommunications services.

"If we can get data delivered to decision makers more quickly, we can beat the competition," says Perry Kosieniak, a senior application consultant.

Speedier decision making and increased efficiency for both its IT and business units is what GTE Telephone Operations expects to gain from its data warehouse implementation.

OPERATIONS VS. DECISIONS

The distinction between operational and decision-making needs was a key factor in GTE's move to data warehousing. While existing applications and infrastructure may be adequate to support day-to-day functions such as order taking and billing, they are often insufficient for strategic decision making.

"Decision making usually requires integration of data across multiple subject areas, such as customers, network usage and billing," says Kosieniak. "It may also require the use of sources outside the existing application environment, such as zip code tables or demographic data."

There are performance issues which also distinguish the two types of data management. Operational systems such as online transaction processing tend to place a fairly consistent burden on computing resources. Online query processing, on the other hand, tends to be unpredictable, with periods of intense activity alternating with periods of minimal use.

"You don't want to suddenly submit a large query to an operational server," says Kosieniak. "Not only could you get a slow response, but you may also adversely affect the performance of your operational system." By providing two distinct infrastructures for legacy systems and decision making, GTE can tailor each environment to meet specific needs.

Down the road, however, GTE plans to use a data warehouse to supplement some of its operational applications, such as customer profiling.

Speedier decision making isn't the only benefit that GTE expects to realize from its data warehouse solution. They also expect to increase the efficiency of both IT and the business units. On the IT side, the need for numerous staffers to service the constant stream of data requests is being significantly diminished. "With the data warehouse, you make available resources [that were] previously committed to extraction, replication and reporting," says Susan Guess, another GTE application consultant.

By improving these processes, GTE can reduce its costs and thereby lessen the need for outside contractors. The cost reductions enable the company to offer its own services at lower rates, which is essential to maintaining its competitive position.

On the business side, staff resources can be used more efficiently. "People in the business functions utilize querying tools as well," says Guess, "and they can spend a lot of time trying to obtain the data they need." Now they can focus on their real jobs, she says, to analyze and respond to decision data, rather than struggle to access it.

The main benefit of data warehousing, though, continues to be GTE's ability to respond quickly to the need for accurate, comprehensive data. "The demand for information is continuous," says Guess. "Data warehousing will help IT satisfy that demand and be an enabling factor in the business equation." ●

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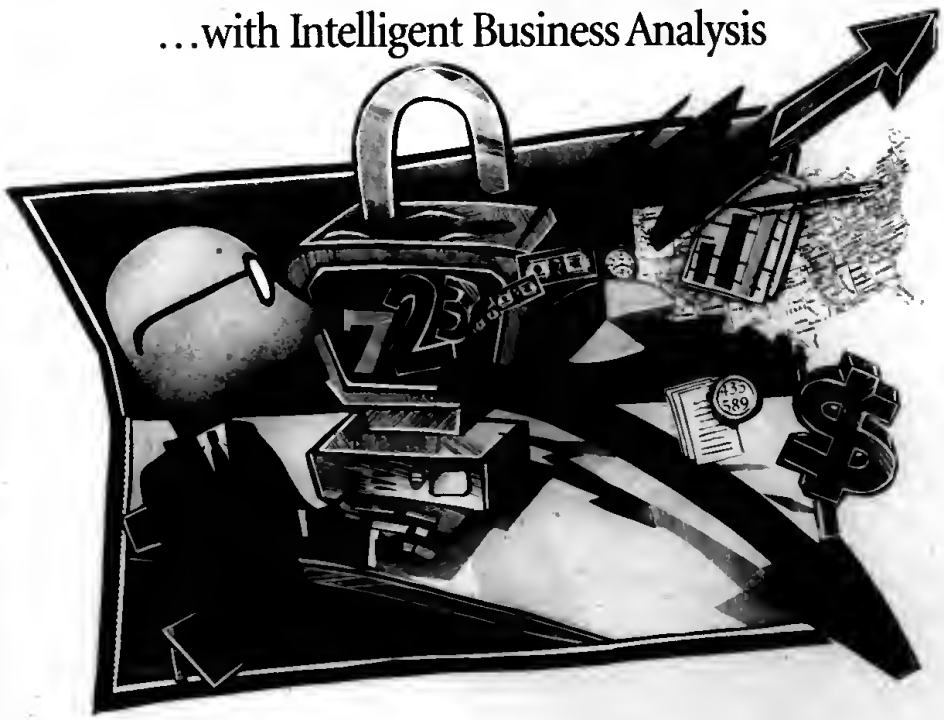

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The first multidimensional systems used built-in databases to store data. Most experts now agree that multidimensional tools can offer significant benefits. Key in evaluating these tools are:

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Multidimensional tools should support the sharing of the decision-making process across workgroups and the enterprise. The tools should be open so that applications can be enhanced and expanded to meet changing corporate goals. Meta data should be used and is key as the link that describes the data warehouse to applications, and transparently holds business anlaysis rules.

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Falco Data Products, Inc. has announced Pipeline 2, PC-to-host communications software.

According to the Sunnyvale, Calif., firm, Pipeline 2 provides Object Linking and Embedding (OLE) 2.0 automation support and acts as a universal communications hub for mixed platforms.

Users can create links from multiuser systems to PC applications by writing client programs in a language compatible with OLE 2.0.

Pipeline 2 costs $395.

▶ *Falco Data Products*
(408) 745-7123

STS Systems, Inc. has announced SmartLook 2.3, Windows software that lets PC users view mainframe, midrange and PC-based reports on-line.

According to the Pointe-Claire, Quebec, firm, SmartLook 2.3 features automatic indexing of report data, improved report storage and automatic launching of data exports to other formats.

The product comes with three modules: Editor, Translator and Reader.

SmartLook 2.3 costs $495.

▶ *STS Systems*
(514) 426-0822

Streetwise Software has announced Design Portfolio 2.0, electronic publishing software.

According to the Santa Monica, Calif., company, Design Portfolio 2.0 operates as a built-in feature of either Microsoft Corp.'s Word for Windows or Novell, Inc.'s WordPerfect for Windows and is accessed from the word processor's tool bar.

The software guides users through the process of designing letterheads, faxes, reports, invoices and labels while using the familiar commands of a word processor.

Design Portfolio 2.0 costs $89.

▶ *Streetwise Software*
(310) 829-7827

Leading Edge Products, Inc. has announced the Aviva 2000 line of notebook computers.

According to the Westboro, Mass., firm, the Aviva 2000 line features an Intel Corp. I486DX4/100 processor, dual battery configuration and business audio capability.

Notebooks include PCMCIA expansion capability, a built-in trackball, 8-bit sound and a hidden microphone. Models are available with active-matrix color, dual-scan color or monochrome screens.

Prices range from $2,899 to $3,899.

▶ *Leading Edge Products*
(508) 836-4800

Antex Electronics Corp. has announced NuWave, a digital audio editor for Windows.

According to the Gardena, Calif., firm, NuWave lets users edit compressed audio files created by Antex Electronics and other compatible digital audio adapters.

The editor can handle multiple compression formats within a single edit decision list and features nondestructive editing so that the original file is never altered.

NuWave costs $595.

▶ *Antex Electronics*
(310) 532-3092

Product short

Tanisys Technology, Inc. has announced SpinWizard, a Windows utility that lets users organize their Windows applications and documents. The product provides a rotatable, three-dimensional carousel of icon buttons with hot keys for multistep actions. The carousel highlights currently running programs and files. Cost: $44. Tanisys Technology, Austin, Texas (512) 263-1700.

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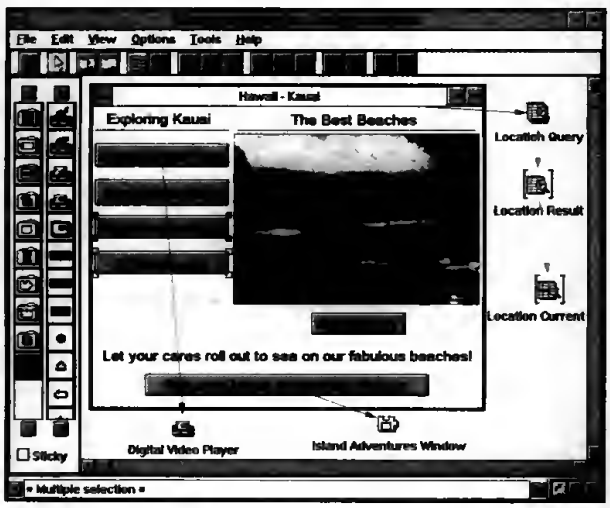

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TRAVELERS' RON CALABRESE: THE BENEFITS OF A PAPERLESS SYSTEM, 74

Apple moves ahead with Open Transport release

By Mark Halper

■ For Apple Computer, Inc. users champing at the bit for improved Mac OS networking support, Apple's long-promised Open Transport cure-all is just around the corner. But there is one catch.

Open Transport will ship as part of an operating system update in June, according to Garry Hornbuckle, Apple's product line manager for communications products. Open Transport is Apple's operating system-level networking architecture. Among other features, it will include a set of application programming interfaces that supports three major networking protocols — AppleTalk, TCP/IP and IPX.

But full IPX support will be missing from the release, Hornbuckle acknowledged. That means Apple users who want to tie client machines to networks based on Novell, Inc.'s NetWare operating system will have to continue to rely on third-party software to provide those links.

Midyear moves

Apple will include Open Transport in the Mac OS update, which is expected to support the midyear hardware shift to machines incorporating the Peripheral Component Interconnect bus.

Hornbuckle said Apple and Novell are considering making some form of IPX support available when Apple formally introduces Open Transport — which was initially scheduled for release last year.

For instance, Apple may at first include support for the IPX protocol but not for IPX services. By comparison, Open Transport will include protocol and services support for AppleTalk and TCP/IP written natively to the PowerPC chip. Today, AppleTalk and TCP/IP are written to 680x0 code.

Another possibility could be to make a peer-to-peer version available but not a client/server implementation, Hornbuckle said.

Apple will make an announcement "in the next 90 to 120 days" concerning the extent to which it will support IPX in the first release of Open Transport, Hornbuckle said. He was, however, more committed in his long-term view: Open Transport will include full IPX support by the time Apple's object-oriented Copland operating system emerges, he said. But that version of Mac OS is not expected until at least mid-1996.

Apple users voiced interest in the IPX portion of Open Transport.

"We've put some NT servers in our environment, and we've switched from IPX to TCP/IP to have a common protocol because the Mac already runs TCP/IP," said Bob Duffy, IS manager at Cornish & Carey Residential Real Estate. The Palo Alto, Calif.-based real estate agency runs a mixed Mac OS and Windows shop. "If the Mac spoke IPX, it would make life a lot easier," Duffy said.

Reaching out

Brian Comnes, manager of the information center at another mixed shop — DHL Airways, Inc. in Redwood City, Calif. — echoed those remarks. Comnes pointed out that Open Transport will expand Apple's hallmark ease of configuration from AppleTalk-only protocols into the IPX world. "The setup for an AppleTalk server is several orders of magnitude simpler than setting up a Novell server for small networks. With Open Transport, we'll have more choices," he said.

Hornbuckle explained that Open Transport will provide Apple users with Macintosh interfaces for configuring any network supported by the operating system.

Phil Corchary, a network systems analyst at US West Marketing Resource Group, Inc. in Omaha, said he is "more interested in Open Transport than anything else Apple is doing because it is going to have an immediate benefit."

But Corchary said he was not surprised to hear that the IPX portion will not be completed when the program ships.

"They've fallen behind the curve on other Novell things," noted Corchary, referring to Apple's delay in making NetWare 4.1.1 available in native mode on PowerPC-based Macintosh servers. Apple, which had planned to make a Novell server available by the end of last year, has delayed those plans by a year.

Unix users have high hopes for HP/UX 10.0

System offers simplified administration, more power

By Jean S. Bozman and Mark Halper

Users of Hewlett-Packard Co.'s Unix systems are looking forward to simplified systems administration and faster applications from the new HP/UX 10.0 Unix operating system announced last week.

Due to ship later this month to early users and independent software vendors, HP/UX 10.0 will be available with packaged third-party applications by June, HP said (see chart). Users with paid-up maintenance contracts will get Release 10.0 at no additional cost; others will find user-based pricing for both workstations and servers.

Performance gains are a key feature of HP/UX 10.0, with average applications running 10% to 20% faster. Workstation users of resource-hungry computer-aided design and graphics packages will benefit immediately.

Highlights of HP/UX 10.0

Feature	Benefit
A converged operating system kernel for all Unix systems	Works on HP's Unix workstations and HP's Unix servers
Improved scalability	Boosts performance of high-end T500 servers
Performance is 10% to 20% greater than HP/UX 9.x	Runs existing HP/UX 9.x applications faster
Logical Volume Manager for workstations	Manages many disk drives as a single virtual disk
A journaled file system	Speeds recovery from outages
Creation of "roles" to assign security IDs by users' job types	Simplifies systems administration

Power boost

"If they can tweak their [operating system] and give us more processing power, then that's practically free [power] for us," said Jim Olsen, a network analyst at Brunswick Corp.'s Mercury Marine division in Fond du Lac, Wis. The outboard motor manufacturer has about 100 HP workstations and plans to buy some HP Unix servers later this year.

Workstation users will also be able to use the Logical Volume Manager, a longtime feature of Unix servers, to more conveniently handle disk resources. With each workstation having one or more disk drives, information systems staffers traditionally have had to physically reshuffle disks to create more space. Logical Volume Manager lets IS staffs look at and manage the workstation disks as one giant "logical" entity.

"We spend a lot of time resegmenting disks," said David Suica, engineering manager at Black Clawson, Inc.'s Shartle Division, a heavy-equipment manufacturer in Middletown, Ohio. "You have to control the volume of data going to any one disk, and this would make it much more manageable."

High-end servers will gain the most from HP's improved multithreaded HP/UX system kernel. "The primary feature we're looking forward to with 10.0 is support beyond six processors," said Jim Sage, vice president of IS at music retail chain Camelot Music, Inc. in Canton, Ohio. Camelot has a four-way T500 server, but Sage said he wants to use 10 processors before

HP/UX, *page 74*

HP does the two-step

The HP/UX 10.0 Unix operating system will ship in two stages, so early users will have to request shipment.

The new business release will ship at the end of the month, HP said. A general business release will be available about 90 days later, when third-party software vendors are scheduled to ship HP/UX 10.0-compatible packages.

David Scott, software product line manager for HP 9000 servers, said "any installed-base customer who wants to gain access to HP/UX 10 earlier than [the general business release] can do so." This staggered approach is similar to the "push/pull" marketing HP uses for its proprietary MPE/IX operating system in which customers buy early "pull" versions months before HP generally "pushes" more stable and feature-rich versions to the market.

Extending the test period is another reason to have a two-step release, analysts said. "Stability is certainly an issue because any significant upgrade like this is bound to have some problems," said Peter Lowber, a senior analyst at Dataprо in Delran, N.J.

Users will likely play a key role in getting final bugs out of the way. "They probably have selected customers who they feel are going to work it very hard," said Jim Brennan, a senior director at WorkGroup Technologies, Inc. in Hampton, N.H. "That would show up any problems that they weren't able to get in a lab" setting.

— Jean S. Bozman and Mark Halper

Collabra Share 2.0 adopts client/server architecture

By Suruchi Mohan

■ Collabra Software, Inc. jumped ahead of the pack recently when it announced the latest version of its discussion database software, which features a scalable client/server architecture.

Collabra Share provides a forum for discussing different topics electronically, and it integrates with different electronic-mail services.

With Version 2.0, users have the option to choose a file-sharing or a client/server architecture. In the latter, the server component actually does some of the processing. The previous version was file-sharing only. The server component runs under Microsoft Corp.'s Windows NT, and Collabra said it has no immediate plans to support other operating systems.

The announcement of Collabra Share 2.0 took place at the recent Demo '95 trade show in Palm Springs, Calif. Lotus Development Corp., Microsoft and Novell, Inc. are all expected to announce client/server versions of their mail packages later this year. Collabra has made this announcement in anticipation.

Analysts said Mountain View, Calif.-based Collabra will not necessarily reap benefits by being first out the door because users do not plan to move to client/server right away. Mark Penwell, senior systems analyst at Whirlpool Corp. in Benton Harbor, Mich., said he has no immediate plans to adopt client/server discussion software. Longer term, however, Whirlpool is heading in that direction, he said.

"Collabra is preparing for the move toward client/server messaging," said Bob Flanagan, director of workgroup computing at The Yankee Group in Boston. "If indeed Microsoft and Lotus are successful in migrating users to client/server, Collabra will be ready for it."

Collabra is also giving users a means to handle information overload. Collabra Share 2.0 includes a number of tools to help manage information. "The first version of Share captured corporate knowledge accessible by anybody. Now they are letting users customize that information," Flanagan said.

All in one

Collabra Share 2.0 includes the following:

- **Remote connectivity.** Share 2.0 remote users dial in using IPX, TCP/IP and NetBeui.
- **Integration with mail.** This includes single log-in, direct access to E-mail directories and the ability to move between personal messages and discussion databases.
- **Information agents.** One lets users replicate forums across the Internet. Another gives users the ability to tap into the Internet without requiring direct access at the desktop. And one agent on the server gives all users in an organization access to newsgroups.

Close but no cigar

Overall, the product addresses most of the shortcomings of the earlier version, said Gordon Kipp, vice president of information technology at Banctec, Inc. in Dallas. For example, in Version 1.0, users could not change existing documents.

However, the product is still unable to interface with Windows 95 data. A few people at Kipp's firm are beta-testing Windows 95. They were Collabra users but are unable to use it now, Kipp said.

The company said, however, that it will support Windows 95 when it ships.

Collabra Share 2.0 will start shipping in the second quarter. The client/server edition costs $99.95 per user for a 100-user license. The server software costs $995.

Users can still buy a version in which the client does most of the processing. That version is called the file-sharing product and costs $69.95 per user for a 100-user license. In both cases, the agent software costs extra.

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Travelers reduces risk of claims errors

Paperless system helps agents process cases

By Ed Scannell

A couple of years ago, case managers handling workers compensation claims at Travelers Insurance Co.'s 50 or so remote sites were buried by paperwork.

Rapid business growth made it increasingly difficult for case managers to provide detailed status reports on claims that the company's corporate clients demanded. It was also difficult to track the claim amounts as negotiations ensued.

To solve these and other workers compensation-related problems, in late 1993, Travelers launched one of the company's largest application development projects. The result was the Workers' Comp Case Manager Workstation, which was completely rolled out to all remote offices by mid-1994.

While Travelers has not yet gathered conclusive evidence about how much money has been saved, there is solid evidence that the application has improved productivity. "We have brought in an increased volume of 10% more claims with existing staff so far," said Paul Reid, information systems director in Travelers' PC Claim Systems Division. The company expects even more of a return "over the next few years," he added.

ON SITE

Travelers Insurance Co.
Hartford, Conn.

Challenge: To increase productivity of commercial claims case managers and improve overall communication with customers by reducing case managers' reliance on paper files.

Strategy: Installed a workstation environment that helps case managers track claims through complete cycles.

Results: Company processes 10% more claims with existing staff and expects that figure to grow.

The system has also improved customer service. A big drawback to the old paper-based system was that too often, experienced case managers handed off unfinished cases to less qualified clerical staff and moved on to other cases.

"Case managers were typically college graduates handling the more complex indemnity claims where someone is out of work. But they would typically hand off work to clerical people who had to interact with our accounting-based system," said Ron Calabrese, technical director in Travelers' PC Claim Systems Division.

Another issue was that while the old system did a reasonable job of making claims payments and booking them to the general ledger, it made it difficult for managers to track claims.

The old system also had a decidedly home-office focus. "If you went to a remote office, you could typically see a case manager with paper files for dozens of active claims spread over his desktop. They needed immediate access to those paper files to manage a claim to its full resolution," Reid said. The situation in the remote offices was particularly acute because the vast majority of the workers compensation cases are handled by some 1,600 employees in these offices.

The new, OS/2-based application is used by virtually all of the 1,600 employees, and it gives experienced case managers a clearer overall picture of an entire case and lets them track it. Also, case managers have discovered that they can more accurately track and analyze calls and uncover trends through customer questions, which helps them anticipate customer needs.

Travelers' Ron Calabrese *says system helps case managers provide better customer service*

Working together

The project brought together Travelers internally developed OS/2-based workers compensation application and Customer Service Information System with off-the-shelf Windows-based desktop productivity applications. It allows case managers to view all these applications, side by side, on one screen. The finished product is anchored by what IS executives describe as a user-driven workflow management system.

The application generates a daily to-do list, calendar and tickler file. It also lets a case manager quickly inventory a list of cases and sort those cases by number or employee. All told, Calabrese said, "it has eliminated quite a few hand-offs" to clerical workers.

Once the application was rolled out, each of the company's remote offices received a local database that lets case managers access essential information much more quickly. The net result is that case managers who handled 30-case workloads a couple of years ago now typically handle 100 cases, company executives said.

While a lot of claims data exists on PCs and local servers, a significant portion of the claims processing and check printing is done on host systems, which means the mainframe still plays an integral role.

So case managers "can still take advantage of the portion of the centralized processing and check printing that makes sense for them," said Joe Correira, a vice president in Travelers' Computer Science Division.

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HP/UX

CONTINUED FROM PAGE 71

this year's holiday selling season.

Analysts said the performance gains were needed badly, as high-end T500 servers failed to scale well beyond six to eight processors. That shortcoming has cost HP some high-end sales, including recent bids at The Boeing Co. and Hyatt Hotels Corp. [CW, Dec. 19, 1994].

Carol Mills, general manager of HP's General Systems Division, said a planned 1994 release was pushed into the first quarter of 1995 in a bid for more speed. David Scott, software product line manager for HP 9000 servers, said TPC-C benchmark performance nearly doubled for a 12-way HP T500 server running HP's Allbase database.

Paul Dickerson, a senior systems engineer at Liggett Group, Inc., a Durham, N.C., tobacco company, said he is looking forward to improved scalability. But he said the new release is a double-edged sword because it's new file-system layout "means we won't be able to just install it and copy our files over." Converting to the new file system and waiting for an Oracle Corp. database port could delay an upgrade from HP/UX 9.0 at his site, he said. But HP is expected to provide a utility to ease that migration.

Other users said the new file structure is a plus because it is now compatible with other Unix 5.4-based systems. "Things will be more standard," said Ray Ball, a senior software analyst at Fisher-Price, Inc. in East Aurora, N.Y. "We'll expect to find the same commands in the same directories."

Judith Hurwitz, president of Hurwitz Consulting, Inc. in Watertown, Mass., said many technical users are impatient to install HP/UX 10.0. But HP's conservatism about the HP/UX 10.0 delivery may pay off for commercial server accounts. "People who are downsizing from mainframes are very cautious," she said. "They're not risk-takers. They're running their business on these machines, and you can't reboot your business."

HP/UX 10.0 prices will be user-based, ranging from $995 for a two-user license to $12,995 for more than 64 users. Because workstations and servers are sold with a two-user license, upgrades to an eight-user license for both workstations and servers will be priced at $1,250. However, upgrading to a 32-user license will be priced at $4,900 for servers and $5,300 for workstations, HP said.

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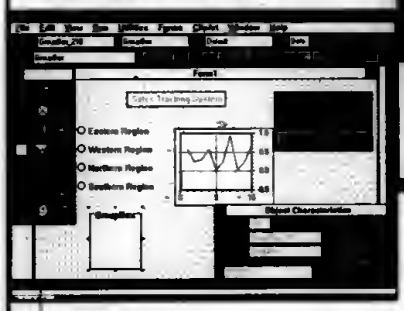

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SCHOOL DISTRICTS GIVE MICROWAVE HIGH GRADES, 78

Ultimate client/server

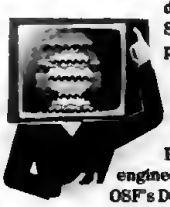
By Kim S. Nash and Ellis Booker

Picture this: One hundred fifty thousand users statewide pointing and clicking around the front end of a host-based multimedia application of several-hundred gigabytes. The users expect a 500-msec response time — or less! — when they request uninterrupted feeds of roughly 765M bytes of data.

And a good number of those users are pressing "Enter" simultaneously.

Sound like the client/server application from hell? That's the vision for an interactive TV system. IS shops struggling to make a go of their own mainstream client/server projects can learn from cable, phone and media companies such as US West, Time-Warner, Bell Atlantic and others.

Welcome to the first installment in an occasional *Computerworld* series that examines the technology tricks that interactive TV pioneers can teach IS. This week, Southern New England Telephone (SNET) shares tips for systems integration.



SNET recently started designing a 150,000-home interactive TV trial planned for two counties near its Hartford, Conn., headquarters. The telecommunications company's $4.5 billion commitment includes hardware, software and consulting for the next few years.

Though several of the 35 responses to SNET's 1994 request for proposals came from hardware/consultancy teams or full-service consulting firms, the Baby Bell chose to mix and match individual suppliers. That means integration will be "the hardest task we do," said Scott Wilcox, director of technical operations for SNET's multimedia services group.

SNET chose six main vendors, which means at least that many integration subprojects within the design and development of the pilot, said Ed Kershenbaum, manager of systems integration. Kershenbaum is in charge of, for example, getting the HP video server hardware talking to the Scientific-Atlanta set-top boxes on the consumer end and the Sybase Intermedia multimedia database on the back end.

Lesson 1: Cartography

So far, SNET and consultants from Sybase and HP have spent seven months mapping the what, when and how of their ideal system. IS workers have charted technology actions and reactions, starting from when a home viewer aims a remote control at the TV and presses a button.

Knowing how each piece of hardware and software must respond as the signal travels through the set-top box, over the network, to the movie database and back gives Kershenbaum some idea of what each interface will require. "Some will be more complicated than others," he said. "So we'll know how much effort to put where."

IS folks should apply a similar design approach to their own client/server applications, he said.

Lesson 2: Standardize

SNET's integration and application development teams agree: Standards are a must where possible. For example, SNET's primary development tools will adhere to the CORBA specifications for object sharing, said Ron Soltis, senior software engineer at SNET. Likewise, the OSF's DCE is important, he said.

Obviously, standards are missing in several areas such as systems and network management, he said. "We're going to have to take a few guesses, and we'll probably make a few mistakes, but certainly DCE, CORBA — these things can reduce our risk."

Lesson 3: Standardize, but don't stand still

Firms in competitive industries can't twiddle their thumbs, waiting to see which standard or vendor wins which wars. SNET learned that at the start.

Interactive TV — like client/server computing, for many IS shops — is new ground. Despite the hype surrounding Oracle's Media Server and Sybase's Intermedia, for example, neither database has really been proven in live, in-production interactive applications, said Bruce Jacobson, SNET's multimedia technology director. "Going with any vendor, either Sybase or Oracle, for this would have required a leap of faith," he said. "We took one."

In other words, IS workers should indeed understand their business goals and evaluate appropriate products. But they should *not* get frozen in oncoming vendor headlights.

Next: Time-Warner Interactive

Data center fights fires before it gets burned

By Stephen P. Klett Jr.
SALINAS, CALIF.

The running joke among information systems employees at Household Credit Services, Inc. (HCS) used to be that the only thing that could bring their network down was for the central router to catch on fire.

That is exactly what happened last December, with the result being a more proactive network management system built mostly out of standard components.

At the time, however, the company was literally putting out fires. Troy Williams, communications analyst, was sent to HCS's central data center to investigate possible trouble with one of the its Wellfleet Communications, Inc. Backbone Concentrator Node (BCN) routers. "When I walked into the room and saw smoke pouring out of the box, to say my heart leapt into my throat would be putting it mildly," Williams said.

HCS's Troy Williams: *'Each minute the network is down is $10,000 in lost revenue'*

Costly crises

Backbone routers represent the heart of most corporate internetworks. When they go down, entire corporate networks can go down or become isolated from vital databases. Therefore, it is no surprise that many network managers' nightmares are of serious router breakdowns. Furthermore, at HCS, the saying "time is money" is more than just a cliche. "Each minute the network is down is $10,000 in lost revenue," Williams said. HCS provides credit-card services for HouseHold Bank, General Motors Corp. and Ameritech Corp., among others.

As it turned out, a defect in one of the four power supplies in the BCN generated so much heat that the unit caught on fire, which caused the router to automatically shut down. "Evidently, those power supplies were supposed to be swapped out by Wellfleet last year, but they obviously didn't get to everyone," Williams said. Wellfleet has since replaced the supplies.

At the time, Williams and other members of the IS team pulled the hot power supply and replaced it. Total downtime was only 15 minutes, during which time HCS's two remote sites in Chesapeake, Va., and Las Vegas were completely cut off from HCS's mainframe databases. HCS's loss: $150,000.

After the initial panic subsided, William's outlook on the incident was positive. The BCN "is a very fault-tolerant box, and [by shutting down] it was just protecting itself, which is good, and I was impressed," he said.

However, through trial by fire, HCS has determined that being notified of potential trouble before it gets out of hand is much better than being forced to react to problems as they occur, Williams added.

This reasoning now takes center stage in HCS's network management philosophy. To manage about 5,000 nodes in three primary locations, HCS's 17-member IS team has built a proactive management system using mostly standard, off-the-shelf Simple Network Management Protocol (SNMP) applications.

Novell, Inc.'s NetWare Management System, Digital Equipment Corp.'s Polycenter NetView and SynOptics Communications, Inc.'s Optivity 5.0 are used to manage the company's IP and IPX workstation and server traffic as well as SNA mainframe traffic.

By monitoring system resources and thresholds, the management system prevents most common problems. If not, technicians are automatically paged and informed of the problem.

The result? HCS's IS team has been able to meet its service level agreements with business units to deliver a 98% uptime level. Just three years ago, HCS was struggling to provide even 65% uptime.

In addition, Williams and other HCS IS staffers typically work normal eight-hour days — a rarity in their line of work.

"I like where [HCS] is heading because people tend to talk more proactive than they are today. Most are still running around trying to put out individual fires," said Jim Metzler, co-director of data communications at The Yankee Group in Boston. Without adherence to standards, especially SNMP, such a proactive stance would not be possible, he said.

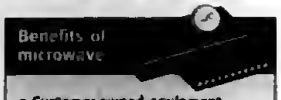
School districts give microwave top marks

By Laura DiDio

From kindergarten through 12th grade, schools are increasingly putting wireless microwave technology at the head of the class as they navigate the ABCs of internetworking entire school districts.

Wireless microwave technology, which has been around since the 1960s, is undergoing a renaissance in the '90s. Users such as school districts are rediscovering microwave's advantages as a reliable, cost-effective internetworking technology.

K-through-12 school districts typically have only a fraction of the operating budgets of their wealthier university counterparts. But they find microwave appealing because it lets them link dozens of geographically dispersed schools at full Ethernet speed for a fraction of the cost of fiber-optic cable.



Benefits of microwave

- Customer-owned equipment
- No recurring costs
- Transparency to network
- Full-speed 10M bit/sec. Ethernet, 20M bit/sec. duplex Ethernet and 45M bit/sec. DS3 connections

This was the case for George Araya, technology specialist at the Desert Sands Unified School District in Palm Springs, Calif., and Bruce Ionno, data processing manager at the Atlantic City Public School System in Atlantic City.

"For 10 cents on the dollar vs. the cost of fiber-optic cabling, we were able to link all 21 schools in our district for a onetime cost of $500,000, compared with an estimated $5.5 million for comparable leased-line connections," Araya said. The district is using gear from Microwave Bypass Systems, Inc. (MBS) in Hingham, Mass. "The MBS microwave equipment was the only solution that allowed us to transmit voice, data and video at full wire-speed Ethernet reliably and cheaply," Araya said.

The Atlantic City Public School System similarly installed a microwave link last September. The school district had looked into a variety of options, but these choices failed to pass muster because of prohibitive costs, according to Ionno.

"The fiber-optic cable priced out at $3,000 per month plus $20,000 in up-front installation costs. By contrast, the microwave link carrying our Ethernet data traffic cost $40,000 complete, and we own the equipment," Ionno said.

His initial skepticism — and fears that inclement weather such as fog or excessive rain would disrupt network operations — has proven unfounded.

"The MBS microwave equipment works perfectly and is superior to fiber," Ionno said. "We've done benchmark tests transmitting files over the hard-wired Ethernet network and over the Ethernet microwave connections. The response time is the same."

Equal access for all

The microwave technology is also a great enabler: It allows schools to transmit all types of data, including multimedia and full-motion video, and also lets school districts access the Internet. The Internet is an equalizing force for districts such as Desert Sands, which encompasses many poor neighborhoods. "Internet access evens the score for our students who otherwise would never have access to the multitude of services and information that they get on-line," Araya said.

The positive experiences of the Desert Sands and Atlantic City school districts are causing other school systems to sit up and take note.

Richard Rigling, assistant superintendent for business affairs at Lowell Public Schools in Lowell, Mass., and Steve Arnoff, administrator of instructional technology, recently phoned Ionno for a midterm report card on the MBS microwave network's performance. They liked what they heard.

High-tech education

School districts that have installed microwave networks include the following:	School districts that are considering microwave networks include the following:
• Atlantic City Public School System, *Atlantic City*	• Lowell Public Schools, *Lowell, Mass.*
• Desert Sands Unified School District, *Palm Springs, Calif.*	• Mesquite Independent School District, *Mesquite, Texas**
• Lemon Grove School District, *San Diego*	• Rockwood School District, *Ellisville, Mo.*

* Using microwave for cable TV transmission; considering it for data

"We can't afford leased lines or FDDI, and microwave seems like a good fit," Rigling said. Arnoff said that if the microwave implementation is approved — most likely in May or June — the Lowell school district may put a microwave tower on each of its 10 new school buildings.

Dennis Hevron, director of electronic engineering at the Mesquite Independent School District in Mesquite, Texas, is also considering adding microwave to his district. "I like the reliability of microwave. And I think it will have a place in our networks," Hevron said.

Spry aims for wider browser distribution

By Ellis Booker

Spry, Inc. wants to put a copy of its Internet browser in every pot by distributing it with general merchandise such as refrigerators and athletic shoes.

Spry's Mosaic browser provides a graphical way to navigate the Internet. Company executives said it makes a lot of sense to distribute it to consumers. "Companies are putting up Web sites all over, but 98% of their customers are not on the Internet," said David Pool, president and chief executive officer of Spry.

Late last month, Seattle-based Spry launched Mosaic In A Box, a single-disk product that can get new users running on the Internet in minutes. Like Internet In A Box, which Spry introduced last fall, the latest title automatically creates local Internet accounts through CompuServe, Inc.'s network of more than 400 nodes worldwide.

Packaging the 'net

Last week, Spry, Ulilink Technologies, Inc. in Falls Church, Va., and Competitive Systems Corp. in Boulder, Colo., announced WorldWire for Windows, a corporate Internet bundle of software, TCP/IP access and networking hardware for Windows-based Ethernet. WorldWire includes Spry's Internet navigation software, Internet access through Ulilink's Ameritel TCP/IP network and Competitive Systems' Microfusion 900 router. The Windows package includes a five-user corporate license for Spry's Air Series. The $5,995 package is slated for March.

Honing the focus

What is unique about Pool's strategy is his desire to forge alliances — none of which have been announced yet — with general-interest consumer goods companies. The result, Pool said, will be a profusion of company-specific, on-line networks able to micro-market to consumers. He said this approach will be more focused than what vendors of goods and services can achieve today with commercial data networks such as CompuServe or America Online. These networks dilute a merchant's message with unrelated services and data, he said.

Although Spry has no formal deals with large consumer-oriented firms, it does have some other things cooking. Martin Rood, president of Dealernet in Lynnwood, Wash., recently received 10,000 copies of Mosaic In A Box, which he is planning to give away this week to car dealers at the National Automobile Dealers Association meeting in Dallas. "Someone has to proactively go out and get people to sign up" on the Internet, Rood said. The Dealernet World-Wide Web site has been up for 18 months.

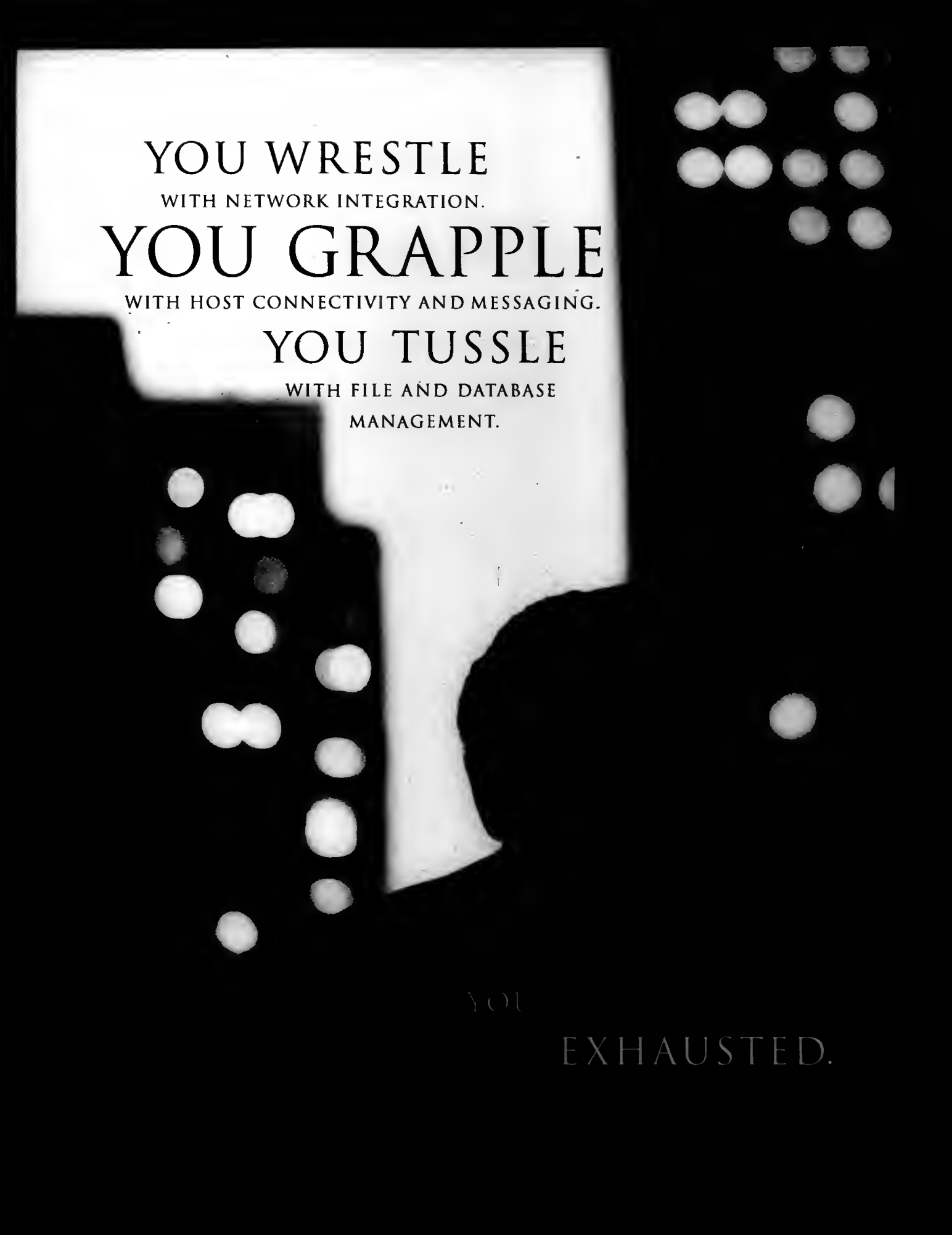
Analysts said Spry's distribution strategy is welcome but that the company is not alone in wanting to make the Internet more mainstream.

"I'm glad Spry has this product, but they have to move on execution," said Jerry Michalski, managing editor of "Release 1.0," a newsletter in New York. He said Prodigy, Inc.'s Web browser, the first among the commercial data networks, could offer functionality similar to Spry's default home page approach. "If Prodigy felt like doing it, they could set a button from an advertisement appearing on their core service to the advertiser's Internet home page," Michalski explained.

The next step in bringing consumers onto the Internet and into cybermalls may be to make access free, said Mark Winther, vice president of worldwide telecommunications at IDC/Link Resources Corp. in New York. "Carriers sell $7 billion worth of 800 numbers a year," Winther said. Businesses with 800 lines have found them "a tremendously effective and cost-effective way of providing support and a way to order goods."

"For the Internet to truly become a commercialized vehicle for new forms of business to the consumer, this has got to happen," Winther said. "It's not going to happen by [Internet access] and on-line providers beating themselves up on prices." He said it has taken CompuServe 20 years to reach just 2.5 million subscribers.

Mosaic In A Box will be available by midmonth for $49.95 retail; users will be billed $9.95 a month for service plus $2.95 per hour after the first three hours.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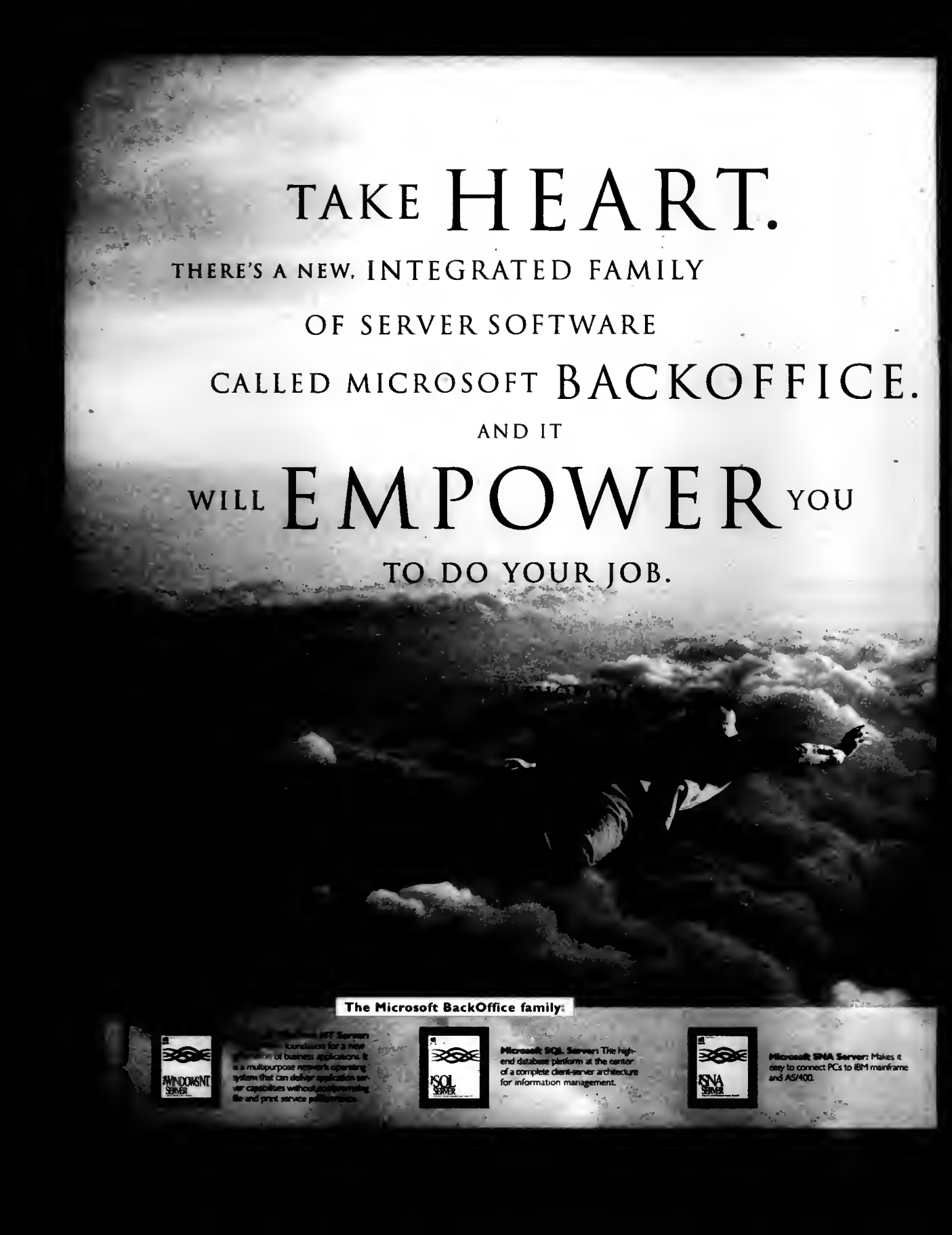
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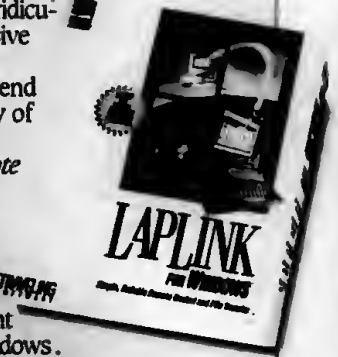

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PC Magazine, UK, Oct. '94

"LapLink for Windows 6.0 is seriously good stuff. Recommended."
BYTE Magazine, Jan. '95

"If you use more than one computer, you need LapLink for Windows."
PC Computing, Nov. '94

"Installation is simple and the connections are easy to set up."
Windows Magazine, Dec '94

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Vendors pile onto 100VG-AnyLAN bandwagon

By Stephen P. Klett Jr.

The 100VG-AnyLAN standard got a much needed lift last week when more than a dozen vendors announced plans to either ship or develop products based on the 100M bit/sec. internetworking technology.

Among the vendors that pledged support were Hewlett-Packard Co., Chipcom Corp., Cisco Systems, Inc. and IBM. 100VG-AnyLAN, which was proposed by HP as an upgrade for Ethernet and Token Ring networks, can support multimedia applications at high speeds.

The announcements took place at the first annual 100VG-AnyLAN Forum meeting in San Francisco and included the following:

- HP unveiled an adapter card that can run at either 10M or 100M bit/sec. transmission speeds. The adapter card is available for $249.
- Alfa, Inc. in Westfield, N.J., said it will ship a VG adapter card that can run at either 10M or 100M bit/sec. This card is available for Industry Standard Architecture- (ISA), Extended Industry Standard Architecture- (EISA) and Peripheral Component Interconnect-based systems and will be ready in the first quarter, followed by a 16-port hub in the second quarter. The cards will be priced starting at $225, and the hub will be priced at less than $300 per port.
- MultiMedia LANs, Inc. in Charlotte, N.C., announced a six-port, expandable hub with a 100M bit/sec. uplink port priced at $1,249. It is available now.
- Thomas-Conrad Corp. in Austin, Texas, said it will ship 10M or 100M bit/sec. ISA and EISA adapter cards in April priced from $225. The company will also ship a 24-port hub in the second quarter; pricing was not disclosed.
- Katron Technologies, Inc. in Houston took the wraps off ISA and EISA adapters as well as 7- and 13-port hubs, which will ship next month. The price of the cards will start at $199, and the hubs will start at $1,295.
- Compex, Inc. in Anaheim, Calif., announced the FreedomSwitch, a 24-port 10Base-T switch with an optional 100VG-AnyLAN plug-in module called HyperPipe. Both products are slated to ship in April for $5,000 and $500, respectively.
- Motorola Microprocessor and Memory Technologies Group announced plans to develop 100VG semiconductors.

Demanding standards

100VG-AnyLAN differs from 100M bit/sec. Ethernet in that it uses a media access control method called Demand Priority rather than Ethernet's traditional Carrier Sense Multiple Access with Collision Detection method. Both technologies are expected to become formal standards in the Institute of Electrical and Electronics Engineers, Inc. in the first half of this year.

Necessary lift

Industry observers said the products were critical to boost 100VG-AnyLAN's credibility in the face of product pressure from alternative technologies including 100M bit/sec. — or "fast" — Ethernet and 25M bit/sec. Asynchronous Transfer Mode.

100VG-AnyLAN users contacted said they were encouraged by the product developments.

"100VG has very credible players behind it, and it performs as advertised, and it's very easy to install," said Kevin Walsh, network specialist at the University of California at San Diego. The university is using 100VG AdvanceStack hubs from HP. "The industry just needs to give new technology like this time to evolve," Walsh added.

Briefs

U.S. Robotics, Cisco team

Skokie, Ill.-based U.S. Robotics, Inc. and San Jose, Calif.-based Cisco Systems, Inc. have announced plans to integrate Cisco's Internetwork Operating System into U.S. Robotics' hub platforms. Out of the gate, U.S. Robotics will integrate Cisco's 2500 router into its Total Control Enterprise Network Hub. The goal of the two companies is to provide high-end, dial-in remote access in a single chassis.

AT&T chooses StrataCom

AT&T Corp. awarded StrataCom, Inc. in San Jose, Calif., a multiyear, multimillion-dollar contract to provide StrataCom's IPX and BPX high-speed digital switches. The switches will be used to offer frame-relay services to customers on AT&T's InterSpan network.

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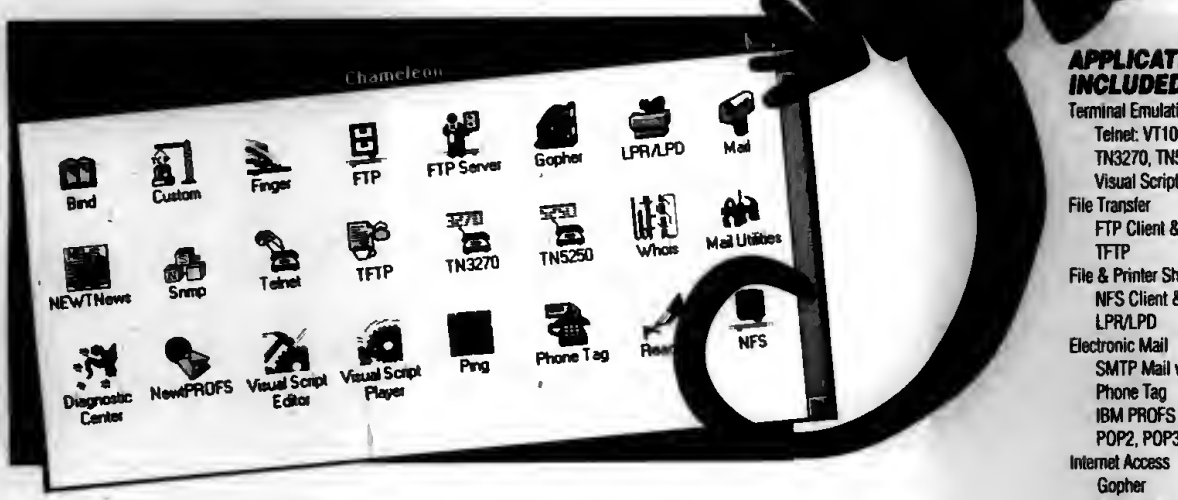

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3Com Corp. has announced the Fast EtherLink PCI 10/100 Parallel Tasking adapter, a 100M bit/sec Ethernet adapter.

According to the Santa Clara, Calif., company, the Fast EtherLink PCI 10/100 Parallel Tasking adapter combines bus mastering technology with 3Com's Parallel Tasking process, which speeds data transfers by allowing separate tasks to be performed in parallel.

The adapter is compatible with any Peripheral Component Interconnect-compliant machine and features a wide range of network software support as well as a desktop management interface.

The Fast EtherLink PCI 10/100 Parallel Tasking adapter costs $275. A pack of five costs $1,375.

▶ *3Com*
(408) 764-5000

Allied Telesis International Corp. has announced the AT-3624TR and AT-3624T, 24-port modular hubs managed by Simple Network Management Protocol.

According to the Mountain View, Calif., company, the hubs let users configure and expand systems in the field to meet any Ethernet LAN requirement.

The hubs can be stacked to provide up to 192 ports and act as one repeater. They also have an interchangeable backbone connection port for network changes.

The AT-3624TR and AT-3624T cost $1,795 each.

▶ *Allied Telesis International*
(415) 964-2771

Data Race, Inc. has announced the T1 Drop and Insert Controller Card, which adds T1 wide-area network capability to Data Race's Mach DS Plus integrator platform.

According to the San Antonio company, the T1 Drop and Insert Controller Card lets users plug their T1 line directly into the Mach DS Plus integrator, eliminating external data and channel service units, channel bank boxes and associated wiring.

The controller card features an outbound Digital Cross Connect line and an inbound T1 line and supports four WAN links per card.

The T1 Drop and Insert Controller Card costs $2,495.

▶ *Data Race*
(210) 558-1900

Denmac Systems, Inc. has announced TrenData 2.0, a snap-in extension to Novell, Inc.'s NetWare Management System.

According to the Northbrook, Ill., firm, TrenData 2.0 captures, stores, interprets and reports long-term network statistics acquired by NetWare LANalyzer agents and other Remote Network Monitoring specification devices.

The product supports Ethernet and Token Ring networks and provides data on bandwidth utilization, packet rate, error rates and collision ratios.

TrenData 2.0 costs $1,495.

▶ *Denmac Systems*
(708) 291-7760

XactData Corp. has unveiled XactData, an on-line backup system that uses Integrated Services Digital Network phone lines to back up network data remotely.

According to the Seattle firm, XactData uses backup automation software, Data Encryption Standard, data compression and virus scanning to mirror users' hard drives. Two additional copies of the backup are stored on tape. The software periodically scans files for viruses, copies them to a temporary location, then transmits the compressed and encrypted files to XactData's Control Center.

XactData costs $1,295, plus a $400 to $600 per month service charge.

▶ *XactData*
(206) 654-5300

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MVS users approve DCE's first pass

By Craig Stedman

• When it comes to IBM's new mainframe implementation of the Distributed Computing Environment (DCE) technology, early users seem to be optimists willing to look at the glass as half full rather than half empty.

Several key pieces of the DCE puzzle are still missing from the MVS version, which was released as promised late last year. Nonetheless, customers who tested the software for IBM said it contains the base functionality needed to start hooking their data-rich mainframes into DCE networks, or "cells."

"If all you had was MVS, you wouldn't be able to run a DCE cell," said Mike Graham, MVS team leader at the University of Michigan's Center for Information Technology Integration in Ann Arbor. "But this at least lets you develop DCE applications and move them freely between Unix and MVS."

IBM acknowledged that the current MVS release is just a first step on the road to making the mainframe a full participant in multivendor networks tied together by DCE, a set of middleware and distributed services developed by the Open Software Foundation.

Most glaring among the release's missing functions is that it does not allow a mainframe to act as a server for DCE's security and directory services, which can be run only in client mode on a System/390 for now. DCE security also needs to be more tightly integrated with IBM's Resource Access Control Facility (RACF) software, and DCE's Distributed File System (DFS) is not supported yet. Officials at IBM in Armonk, N.Y., said the company will start adding those features later this year.

Gathering pieces

MVS/DCE beta testers said the missing pieces should make the product more useful. Stitching DCE and RACF security together would soothe administrative headaches, while DFS should make it easier for end users to access data across a DCE network.

The mainframe would also be a logical place to run DCE's directory and security services, the early adopters added. But the initial lack of full server support is not a major drawback, they said. In fact, some asked IBM not to hold up the product just to complete work on that piece.

"We asked IBM not to necessarily wait until they could bring out a Cadillac," said Mike Danley, product manager for internal DCE use at Motorola, Inc. in Schaumburg, Ill. "We wanted a version that was maybe a Yugo that we could start working with. It's going to be a while before we get to where we want to go, but at least we can get going."

Motorola is installing MVS/DCE at its semiconductor operations in Scottsdale, Ariz., to give Unix workstations on the factory floor access to mainframe-based IMS transaction data, Danley said. The company expects the application to be in production by the end of the first quarter as part of an expanded DCE network with security and directory services running on a Unix system.

"MVS has a history of being extremely stable, and that's the kind of environment you want for a security server," said Michael Guidry, a technical adviser at Phillips Petroleum Co. in Bartlesville, Okla. But he noted that Phillips planned to start with its DCE security and directory services on an IBM RS/6000 Unix system anyway "because we felt like that would be an easier transition for us."

Phillips plans to use the MVS implementation of DCE to open up scientific and business data stored on its mainframes to PC users, Guidry said. The MVS project has been put on hold as part of an annual freeze of the company's mainframe environment in January and February, but it should be ready to go into production by May, he added.

Deadline set

Joe Spano, MVS system manager for open and distributed computing at IBM, said the computer giant expects to finalize its plans for adding the missing pieces to MVS/DCE later this quarter.

Furthest along is a port of DFS, which is being jointly developed with the University of Michigan, Spano said. A prototype DFS implementation runs in the university's labs and should be finished in the next couple months, Graham said.

Adding DCE directory server support to MVS "is pretty much a straight port," but the security piece "requires a great deal of thought," Spano said. He declined to comment more specifically on IBM's rollout schedule. IBM has indicated basic security functions would likely be added to MVS/DCE in late 1995, with more capabilities to follow in the next two years.

A new cell mate

Initially, IBM is shipping the following products for integrating MVS-based mainframes into DCE cells:

OpenEdition Base Services for MVS/ESA

Supports development of DCE applications involving mainframes

Components include:
- **DCE remote procedure call**
- **Directory service client code**
- **Security service client code**
- **Distributed time service client and server code**

Bundled in MVS/ESA 5.1 along with Posix-compliant OpenEdition MVS software

OpenEdition DCE Application Support MVS/ESA

Enables DCE clients connected to non-IBM systems to access mainframe data in CICS and IMS transaction environments

Undisclosed license fee based on mainframe processor capacity

OLAP war leaves users in the lurch

By Rosemary Cafasso

As the turf war escalates in the on-line analytical processing (OLAP) market, users are finding little help as they work to establish client/server data analysis strategies.

"From our perspective, it seems to be political issues and typical vendors trying to position themselves," said George Trudel, a business and technology consultant at Blue Cross/Blue Shield of Rhode Island in Providence.

Like several users contacted last week, Trudel said he is more interested in the creation of an industry forum to help set up interoperability standards for data access and analysis.

"I would like to see a council agreeing and standardizing so I can attach bits and pieces from other vendors," said Rick Shnite, a project leader for EIS and marketing systems at Bearings, Inc. in Cleveland. His current data analysis system is from Pilot Software, Inc. in Cambridge, Mass.

Establishing standards and improving interoperability are among the stated goals of the OLAP Council, a recently formed vendor group that touched off the turf war.

The council may be the center of this particular storm, but the starting point is the term OLAP itself. In recent months, the name OLAP has become a catchall for dozens of products that provide data access, analysis and storage capabilities. These products had been more commonly known as decision-support, executive information or business intelligence systems.

The biggest promoters of the OLAP term were a handful of multidimensional database companies, four of which launched the OLAP Council earlier this year. The founding members are Arbor Software Corp. in Sunnyvale, Calif., Comshare, Inc. in Ann Arbor, Mich., IRI Software in Waltham, Mass., and Pilot Software.

"I am not sure I am looking to the [OLAP] council for anything. ... The council [members] have their own motivations, and it is more to advance their position in the marketplace."

— Mark Max, director of financial systems, Blue Cross/Blue Shield of Maryland, on the OLAP turf war

No sooner had this small group officially launched itself in January than vendors such as SAS Institute, Inc. in Cary, N.C., and Holistic Systems in Edison, N.J., began publicly challenging it. Topping the complaint list was the council's focus on multidimensional technology to the exclusion of other executive information systems (EIS) and decision-support software.

Yet the group never intended to exclude vendors and is "aggressively reaching out" to other companies, said Rick Crandall, chairman of Comshare and official spokesman for the OLAP Council.

Left in the middle

So users are now wondering where this conflict will leave them.

For example, Kevin McCarthy, a systems consultant in the investment management division at Cigna Corp., selected a multidimensional database from Dimensional Insight, Inc. in Burlington, Mass. But Dimensional has not been invited to join the OLAP Council.

"My feeling is if a council wants to get together to create some standards, I don't have a problem with that," McCarthy said. "But, if there's just a couple of them making standards, that is a negative — because who are they to make standards?"

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VAX users fly every which way

By Neal Weinberg

Digital Equipment Corp. users appear to be scattering in all directions as they leave the VAX/VMS platform.

Digital's strategy is to shoo VAX shops to the 64-bit Alpha systems where they can still use the familiar OpenVMS operating system. If customers prefer Unix, Digital has an OSF/1 offering. And Alpha supports Microsoft Corp.'s Windows NT as well.

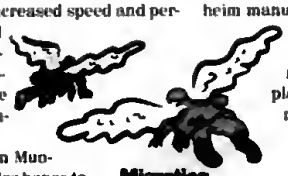
A Digital survey conducted last summer at the Digital Equipment Computer Users Society (DECUS) conference showed that 20% of customers had already migrated to Alpha and 50% planned to move by June. Overall, some 80% were considering upgrading within two years.

Time is ripe

Similarly, a December survey of 66 VAX sites by Pacer Software, Inc. in Westboro, Mass., which specializes in networking software for the Macintosh, showed that more than a third of the sites planned to move to Alpha OpenVMS by the end of this year.

Deseret Book Co. in Salt Lake City switched to Alpha because of the price/performance features, said information systems manager James Barclay. The system runs the company's accounting functions and point-of-sale equipment at its bookstores. "We're pretty happy" with the Alpha system, Barclay said.

The University of Lethbridge in Alberta is moving applications from VAXs to Alphas for the increased speed and performance, said Erik Goble, microcomputer coordinator at the 4,500-student institution.



Migration motivation
Users tend to migrate to OpenVMS on Alpha for performance and price, while Unix is attractive for its application support, according to a survey of 66 Digital VAX sites by Pacer Software.

SGS Tool Co. in Munroe Falls, Ohio, also hopes to trade its VAXcluster for Alphas. The three years of free maintenance on the Alphas alone will save the company $3,800 a month, said systems analyst Wayne Koesling.

But with the barn door to open systems ajar, other users have headed for non-Alpha pastures.

Tokheim Corp. in Fort Wayne, Ind., was leaning toward Alphas but ended up buying Unix workstations from Silicon Graphics, Inc. (SGI) in Mountain View, Calif., said LAN administrator Jack Smith.

Smith asked to evaluate machines from both companies on a 90-day trial before making a decision. Digital wanted to charge $20,000 for the evaluation, and SGI provided three machines for free plus support, he said.

"SGI gave us a deal we couldn't beat, and they were definitely easier to work with," Smith said. At the end of June, Smith said he plans to have 26 VAX workstations "sitting in the parking lot." Tokheim manufactures gasoline pumps for service stations.

Miracle Recreation Equipment Co. in Monett, Mo., a playground equipment company, recently ditched a Digital MicroVAX 3800 for an IBM RS/6000. The availability of a specific type of manufacturing software drove the decision, said Nathan Taylor, senior assistant analyst and programmer at the company.

Slow moves

Vanderbilt University in Nashville is definitely moving off the VAX, but nothing has been decided beyond that, said Frank Kyle, deputy director of the academic computing center.

He needs to move from a central VAX to Unix-based client/server systems for specific university functions. Digital's OSF/1 is a possibility, but "a lot of folks have a religious preference for Sun," Kyle said.

The driving factor in the move to Unix was the availability of large numbers of applications, he said.

Other companies are keeping their VAXs plugged in, either for technological or financial reasons. Gold Kist, Inc. in Carrollton, Ga., runs a proprietary program on its VAX and is sticking with it, said Alan Rundall, human resources manager.

Fred Ishihara, productions manager at Spectra American Color Labs, Inc. in Sun Valley, Calif., said his company may look at Alpha in the future because of its speed, but the VAX system works just fine for now. "We're not about to make a change at this time," he said.

Another option is a desktop solution. The VAX at JMGR, Inc., an architectural engineering firm in Memphis, has been mothballed and replaced with Gateway 2000, Inc. PCs and a Novell, Inc. network, said Chief Financial Officer Arthur Yeates.

The company's strategy is simply to "buy the fastest PC machines we can buy," he said.

David Hudson, vice president of sales and marketing at Pacer Software, said his survey showed a quickening of the pace of VAX-to-Alpha migration, with 25% more Digital customers intending to make a move this year, compared with 1994 results.

On the other hand, the Pacer survey showed that one-third of the companies planned to move at least some of their applications to non-Digital Unix platforms. Systems from Sun Microsystems, Inc. in Mountain View, Calif., were the most popular choice, followed by Hewlett-Packard Co. in Palo Alto, Calif., and IBM in Armonk, N.Y.

Furniture retailer leaves tradition behind

By Craig Stedman

■ Furniture retailer Heilig-Meyers Co. has tripled sales in the past five years by knocking down some walls and expanding beyond its bastion in the Southeast. Now comes the technology redecoration needed to bring the company's increasingly far-flung operations in line with modern computing tastes.

The somewhat antique IBM System/36 machines in Heilig-Meyers' 600-plus stores are being replaced by more contemporary AS/400s, and the Richmond, Va., company is draping together an SNA-based satellite communications network, said Terry Hucks, vice president of information services.

Full speed ahead

More than 500 of the stores have switched to the AS/400 since the project got under way last fall, Hucks said. Meanwhile, the satellite network is scheduled to start its test run in the stores in May, with full installation and operation expected by October, he added.

New inventory and report distribution applications will follow the bulked-up infrastructure later this year, Hucks noted. Longer term, Heilig-Meyers is looking at developing in-store imaging and multimedia capabilities, such as kiosks that provide product information.

Heilig-Meyers has not been held back much by the less polished network it has in place now. With revenue approaching $1 billion, the company is the nation's second-largest furniture retailer. Its rate of growth "is right up there in the top echelon" of companies in any industry, said John Baugh, a securities analyst at Wheat First Butcher Singer in Richmond, Va.

"They're very aggressive and very sophisticated marketers," Baugh said. But Heilig-Meyers is spread out more geographically than its competitors, he added. It operates more stores than any other furniture chain, and most of them are located in small towns and cities rather than major population centers.

Heilig-Meyers stores also tend to be smaller than average for the furniture industry, limiting the amount of merchandise that can be physically displayed, Baugh said.

That diffusion has created some hurdles that the information systems upgrade is meant to address, Hucks acknowledged. For example, the wait on back-order status requests sent in by stores is two days. Heilig-Meyers hopes to reduce that to a matter of hours and give stores the ability to reserve inventory as it comes in from furniture makers, he explained.

The company also plans to start electronically distributing monthly financial reports, product information and other corporate data once it gets the satellite network in place. Those currently have to be sent by mail because of bandwidth limitations, Hucks said.

ON SITE

Heilig-Meyers Co.
Richmond, Va.

Goal: To upgrade the technology at its stores so they can run new inventory, report distribution and multimedia applications.

Strategy: Low-end AS/400s in the stores; an SNA-based satellite communications network is planned for connecting far-flung retail operations with the central office and distribution centers.

Results: More than 500 AS/400s are in place, and the satellite network is scheduled to be fully operational by October.

He declined to comment on the cost of the upgrade project but said Heilig-Meyers expects to start seeing paybacks by the end of the year. In addition, the satellite network "gives us flexibility to put stores in any part of the country," and the AS/400's imaging and multimedia support could help the company improve customer service and display more products, he noted.

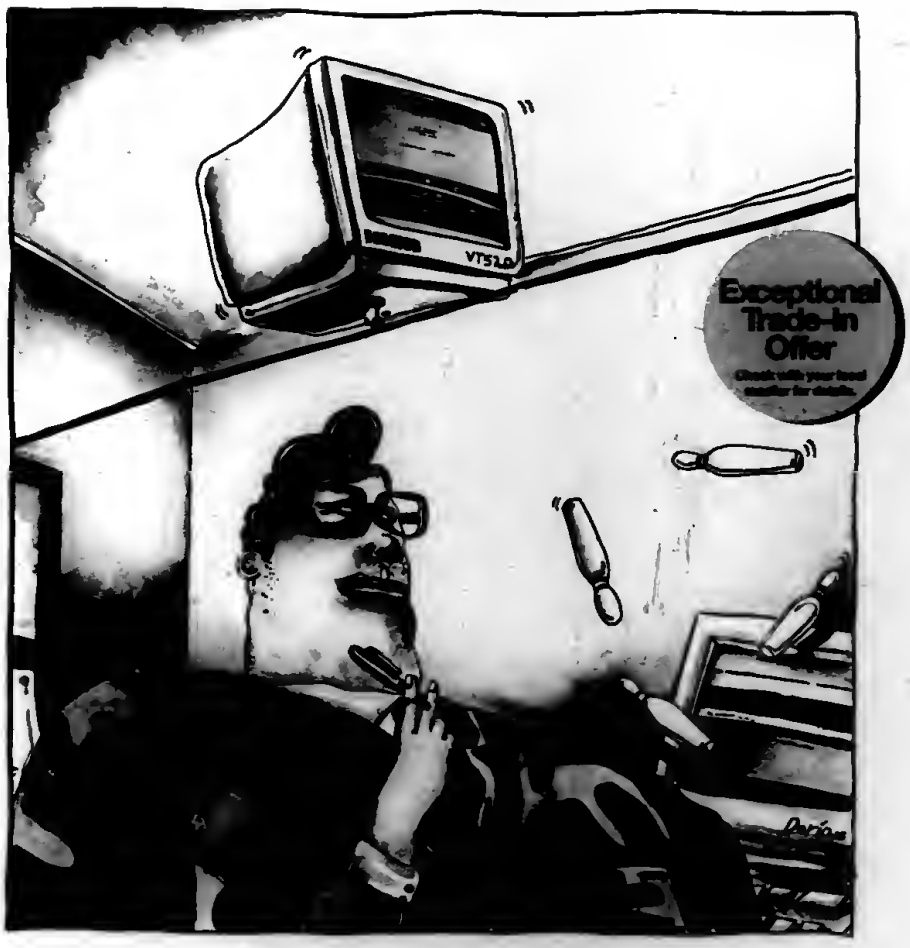
Heilig-Meyers currently uses dial-up connections to tie together its operations, but the more advanced applications that it is developing "require a dedicated network," Hucks said. The satellite approach "seems to be the most effective way" to accomplish that, he added.

No cost comparison

Despite its System/36 heritage and existing use of AS/400s at its central offices and distribution centers, Heilig-Meyers originally expected to switch to Unix systems at the store level, Hucks said. But the anticipated cost savings compared with the low-end AS/400 Model 200 did not materialize.

"I thought [Unix] might be cheaper, and if you look at just the hardware, that may be the case," he said. "But when you add in the database, application development tools and all the things that really come into play, the AS/400 was a better price/performer" because of its bundled nature.

The AS/400 provides as good a foundation for multimedia development as Unix, he added, "although I can't say the tools are all there." The machine's ease of use also played a role, as "having an operatorless environment in the retail stores was important to us," Hucks said.



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January - March, 1995

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
Dec. 26-Jan. 2	Dec. 9	Dec. 16	**Annual Forecast Issue:** A look at key issues and trends that will impact IS Professionals in 1995	
Jan. 9	Dec. 23	Dec. 30	**CW Guide To: Color Printers** Choosing the right printer. With numerous printing technologies (dye sublimation, thermal-wax, color laser and ink-jet) available today, what kind of printer best fits the needs and budgets of business users on LANs and corporate systems? How do you cost justify the move to color? **Buyers' Satisfaction Scorecard:** Color printers for large organizations from market-leading manufacturers. **Firing Line:** A color printer offering the latest technology such as dye sublimation or best alternative.	
Jan. 16	Dec. 30	Jan. 6	**Closer Look:** Client/Server Human Resource Applications	Starch Study
Jan. 23	Jan. 6	Jan. 13	**CW Guide To: Enterprise Network Management** How much can you manage?: How far have the leading enterprise network management platforms progressed in supporting the diverse platforms and functions needed by users on LANs and WANs across the organization? **Buyers' Satisfaction Scorecard:** Dominant network management platforms from major vendors **Firing Line:** The latest most feature-rich enterprise network management alternative.	**ComNet** Washington D.C. 1/23 - 1/26
Jan. 30	Jan. 13	Jan. 20	**CW Guide To: RAID Storage Devices** Large systems RAID, where does it fit in? With new RAID systems on the market packing incredible amounts of storage capacity in shrinking footprint space, the choices are better than ever. Should your DASD be replaced with RAID or should RAID be an adjunct to your current investment? **Buyers' Satisfaction Scorecard:** The market leading large systems RAID products. **Firing Line:** The latest RAID system for enterprise users.	
Feb. 1	Dec. 7		**Computerworld Client/Server Journal** **Vertical Market Focus:** Banking **Section Feature:** Product Focus on Networking	Software Developers' Conference Networks Expo UniForum Object World Interop + Networld Harvey Study
Feb. 6	Jan. 20	Jan. 27	**Special Quarterly Report:** Re-engineering the Workplace	
Feb. 13	Jan. 27	Feb. 3	**CW Guide To: PC Communications Software** Making connections. What are the pros and cons of various methods and products that provide remote access links to LANs and servers? How do they deal with security and reliability issues? What are the most cost effective methods? **Buyers' Satisfaction Scorecard:** Market-leading PC remote access software packages. **Firing Line:** Latest remote access software for server connections.	**Software Developers' Conference**, San Francisco 2/13 - 2/17 **Networks Expo**, Boston 2/14 - 2/16
Feb. 20	Feb. 3	Feb. 10	**Closer Look:** Videoconferencing	
Feb. 27	Feb. 10	Feb. 17	**CW Guide To: Notebook Computers** The price of portability? Users are most concerned about the key features of portability — notebook size, weight and battery life. Which vendors offer the best portability, reliability and support. **Buyers' Satisfaction Scorecard:** Notebooks from the top vendors based on market strength, reliability & support. **Firing Line:** Latest multimedia-enabled notebook from a leading vendor **Custom Publication:** Manufacturing White Paper: Defining Enterprise Resources Planning (part 1 of 4-part Manufacturing Series)	Starch Study
March 6	Feb. 17	Feb. 24	**Closer Look:** Enterprise Software Distribution Tools **Custom Publication:** White Paper on Object Technology	
March 13	Feb. 24	March 3	**CW Guide To: RISC Servers** Server Strategies. Short-term server purchases may be a matter of price/performance, but which systems make the most sense as long-term strategic platforms? Should users target different servers for every application or standardize on the best alternative? **Buyers' Satisfaction Scorecard:** Market leading RISC servers **Firing Line:** Latest RISC server from a top vendor. **Custom Publication:** White Paper on Enterprise Application Development (part 1 of 4-part Enterprise Software Directions Series)	**UniForum** Dallas 3/14 - 3/16 Starch Study
March 20	March 3	March 10	**Closer Look:** Object-oriented Development Tools	**Object World** Boston 3/20 - 3/23
March 27	March 10	March 17	**CW Guide To: LAN Management** Vendors continue to add more sophisticated management capabilities to their peer-to-peer LAN management packages. How well do they address performance, security and tracking issues. How do these packages fit under the companywide network management umbrella? **Buyers' Satisfaction Scorecard:** Market-leading peer-to-peer LAN management packages. **Firing Line:** The latest software to consolidate LAN management for the organization.	**Interop + Networld** Las Vegas 3/28 - 3/30

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Informix Software, Inc. has announced Informix-DCE/Net, connectivity software, and Enterprise Gateway, database connectivity software.

According to the Menlo Park, Calif., company, Informix-DCE/Net is compliant with the Open Software Foundation's Distributed Computing Environment (DCE) standard for interoperability and provides an open connectivity environment for Object Database Connectivity-enabled applications.

Enterprise Gateway provides communications to 60 other commercial databases including Sybase, Inc.'s SQL Server, Oracle Corp.'s Oracle, IMS and VSAM.

Informix-DCE/Net costs $375 per user. Enterprise Gateway costs $20,000 for up to 20 users and $50,000 for more than 20.

▶ *Informix Software*
(415) 926-6593

Daly & Wolcott, Inc. have announced A+ Client/Server, a Windows-based client front end for Daly & Wolcott's Application Plus (A+) distribution and warehouse management software.

According to the Providence, R.I., firm, A+ Client/Server provides IBM AS/400 users with graphical screens for Windows clients and supports multimedia data types. A rollback feature lets users trace their steps backward in history.

A+ Client/Server costs $199 per user.

▶ *Daly & Wolcott*
(401) 351-8400

Objectivity, Inc. has announced Objectivity/DB 3.5, an object database management system.

According to the Mountain View, Calif., company, Objectivity/DB 3.5 provides scalable access to objects as well as traditional database management such as transactions, referential integrity and fault tolerance.

The product supports development language interfaces for C++ and Smalltalk and lets users integrate applications into database environments. Objects can be shared among all the language interfaces.

Prices start at $1,750 for a single-user server, with separate client licenses for C++, Smalltalk or SQL applications.

▶ *Objectivity*
(415) 254-7100

Artecon, Inc. has announced a loadshare/failover option for its LynxRAID storage system.

According to the Carlsbad, Calif., company, the loadshare/failover option provides a standby RAID controller that assumes responsibility for all RAID operations if the primary controller fails.

A command in progress will be completed if a failure occurs, and the standby controller will handle subsequent commands.

The loadshare/failover option includes two RAID controllers and a failover kit. Prices start at $19,995.

▶ *Artecon*
(619) 931-5500

StarWare, Inc. has announced StarSQL, data access software.

According to the Berkeley, Calif., company, StarSQL lets PC users access IBM midrange, mainframe and Unix systems from Windows applications.

Users can bring record-by-record information from remote databases into desktop applications using SQL commands or menu selections. The product uses IBM's Distributed Relational Database Access and Advanced Program-to-Program Communications as the basis for data access and transport.

StarSQL costs $199; volume discounts are available.

▶ *StarWare*
(510) 704-2000

Boole & Babbage, Inc. has announced AutoOperator 3.1, automation software.

According to the San Jose, Calif., firm, the product supports and exploits IBM's MVS/ESA 5.1, IMS/ESA 5.1 and CICS/ESA 4.1 and provides multisystem exception and management capabilities.

It also monitors the health of IBM CICSPlex System Manager and reports on CICS error conditions. An Automation Reporter feature provides data on the efficiency of automation activities and tracks data on the type of automation in a system.

Prices start at $15,600.

▶ *Boole & Babbage*
(415) 325-8300

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Powersoft

Building on the power of people

Tool makers look for client/server niches

By Elizabeth Heichler

With information systems departments increasing their efforts to bring client/server development under the control of formal process management and methodologies, vendors are targeting this niche with special-purpose tools.

"More leading-edge organizations have started realizing that rapid application development has its place, but there are times when it's essential to have more rigor," said Darleen Brown, vice president and research director for applications development technologies at Gartner Group, Inc. in Santa Clara, Calif.

Leading vendors of commercial computer-aided software engineering methodologies are expanding their offerings to meet the needs of client/server developers, Brown noted, and some smaller emerging companies are focusing specifically on this market.

"The most obvious problem is that we're not building electronic filing cabinet systems anymore," said Doug Kreuger, senior systems engineer at Electronic Data Systems Corp. "Client/server complexity has crept into organizations by stealth and clobbered us over the head."

Tools to market

This week, Intersolv, Inc. in Rockville, Md., will begin shipping Excelerator II 3.0, a major new release of its client/server analysis and design package. Priced from $4,000 per user, it includes more support for object-oriented development and an interface to Powersoft Corp.'s PowerBuilder.

Separately, Structured Solutions, Inc. in Atlanta last month released its AD/Method for Client/Server 1.1, and LBMS, Inc. in Houston is readying an update to the client/server development process component of Process Engineer.

Kreuger has been using a beta version of Intersolv's Excelerator II 3.0 for a project at client site NeoData in Boulder, Colo. Kreuger said he is pleased with its increased ease of use, particularly the ability to edit and retrieve object information using a spreadsheet-style display. Developers can choose from multiple object-oriented design approaches or combine elements of multiple methodologies for a single project.

Also on the client/server front, Structured Solutions revamped AD/Method for Client/Server — priced at $25,000 for a project license — with input from two customers.

One of them was Chattanooga, Tenn.-based Computer Task Group, Inc., a consulting and training firm whose client/server offerings division is directed by Fred Hencke. Among the items on Hencke's wish list were more support for process and data partitioning and the ability to see what the technology model and routing structure for a project would look like.

AD/Method for Client/Server 1.1 addresses these issues, Hencke said, and will help him put in place a common methodology that others in his organization can refer to in future work. "It's critical to us to have techniques for producing deliverables," Hencke said. "We need to make sure we have consistency in how we size and evaluate projects."

Hencke said that later this year he would like to replace traditional software engineering techniques in the Structured Solutions methodology with object-oriented ones. "Object-oriented technology is a framework for reuse and flexibility that far outdistances software engineering," he explained.

In stages or all at once

With the new release of the Process Library component of Process Engineer planned for next month, priced at $2,500 per client workstation and $35,000 per server, LBMS will offer users the ability to move to client/server development in either a phased approach or a full-scale conversion, said David Hsieh, LBMS vice president of worldwide marketing.

The LBMS offering is "helping us capture information about the development process," said Daryl Plummer, director of the information services division at Florida's Department of Management Services. Plummer credited Process Engineer with helping his organization succeed with client/server implementation. "This allows us to begin real process engineering and begin to get user requirements from the process," he said.

Broker reaps Unix dividend

By Thomas Hoffman,
NEW YORK

Fiscal conservatism has been a hallmark of Bear, Stearns & Co. since the New York-based investment bank was founded in 1923. Unlike many of its competitors in the cyclical securities industry, Bear, Stearns has never reported an unprofitable year.

So it is hardly surprising that the firm, with $5.7 billion in capital, has taken a decidedly pragmatic approach toward its expanding Unix development cache.

Since 1993, Bear, Stearns has been standardizing its Unix development around the Open Software Foundation's Motif and Distributed Computing Environment standards. Driving that effort was the company's need for a tool kit that would make it easier for programmers to generate applications quickly while satisfying the information requirements of end users.

"Time is money, so the turnaround on [applications] projects is very important to us," said Phillip Stern, a senior managing director of Bear, Stearns' information services.

Bear, Stearns had looked at several Unix graphical user interface (GUI) tools, but their high cost was a deterrent. For example, TeleUse, a user interface management system from Alsys, Inc. in Burlington, Mass., is priced at $7,500 per seat.

In contrast, Bear, Stearns was able to wrangle UIM/X, a Unix GUI builder developed by Montreal-based Visual Edge Software Ltd., for $3,200 per seat under a 20-seat license through Bluestone Consulting, Inc., a Mt. Laurel, N.J., technology transfer and training firm.

Louis R. Czubachowski, an associate director at Bear, Stearns' information services group, said UIM/X was chosen for two main reasons: cost and vendor partnership. For example, not only was Bluestone willing to train Bear, Stearns' programmers on site, but one of its trainers has since become a full-time staffer at the brokerage.

Off and running

It did not take long for Bear, Stearns to generate its first pilot system, a commodities arbitrage application. The first module of that application, which was created to automate workflow processes for arbitrage traders, was in production within three months.

"Even if we had skilled Motif programmers, which we didn't, it would have taken us 33% to 75% longer to develop this and other applications" without a tool like UIM/X, Czubachowski said.

Longer development cycles impact the brokerage's bottom line in several ways. Because Bear, Stearns' information systems organization bills each of the departments it supports by programmer time, applications needed to support new products must be developed on the fly to meet ever-changing market conditions.

Plus, the company wanted to retrain its programmers, who were long on securities industry experience but short on X Window System-based and Motif programming skills.

Essential elements

When Bear, Stearns first began looking at Unix-based GUI screen builders, key criteria were ease of use, flexibility, sound training and thorough documentation.

Bear, Stearns' *Phillip Stern, Marian Lučia and Louis Czubachowski (left to right) agree that UIM/X, a Unix GUI builder, is the right tool for the job*

The latter requirements were particularly important because Bear, Stearns, like many of its Wall Street brethren, has found it difficult to find experienced Motif and X programmers on the street, according to Marian Lučia, managing director of the firm's information services group.

Christine LeViness, a Bear, Stearns vice president of IS and a UIM/X user for the past 10 months, said the development environment has been much easier to use than DevGuide, the Sun Microsystems, Inc. workstation tool she had been using previously.

"I like [UIM/X] a lot better [than DevGuide] because it's much more user-friendly to the programmer, and you can write almost all of your Windows code without having to go into a Unix utility," said LeViness, who recently teamed with other Bear, Stearns programmers to create two Sun workstation-based programs.

One of the biggest benefits that programmers gained from using Unix development suites such as UIM/X was the ability to avoid complex third-generation languages.

On Site

Bear, Stearns & Co.
New York

Challenge: To find a Unix tool kit that non-Motif-literate programmers could use to speed application development.

Technology: Visual Edge Software's UIM/X GUI builder.

Result: Speed of Unix application development increased by 33% to 75%.

Saks refashions client/server systems

By Rosemary Cafasso
NEW YORK

Saks Fifth Avenue is doing away with an internally developed client/server systems and opting instead to buy off the rack.

The upscale retailer recently spent $5 million on Dun & Bradstreet Software's SmartStream, a decision-support client/server application; 53 Hewlett-Packard Co. HP 9000 servers; and consulting services. The systems, to be deployed enterprisewide, will initially be used by the Saks merchandise group, including buyers and store managers, to more quickly use customer data.

Robert Ramsden, *Saks' CIO, says D&B Software will provide integration of all data access tools*

The systems, which are being installed, will replace an in-house client/server data access system the retailer began working on in 1993. Saks built its own data access software with the C programming language and off-the-shelf tools such as Forrest & Trees from Trinzic Corp. in Palo Alto, Calif.

This system was an improvement over the mainframe-only days. Then, staffers frequently waited a week for reports, and the resulting time lag made information much less useful.

Yet by last year, Saks had determined that the client/server system provided only limited access capabilities to its Sybase, Inc. databases, which contain data downloaded from mainframe systems.

The original client/server system simply required too much care and feeding to maintain, said Robert Ramsden, a Saks senior vice president and the retailer's chief information officer.

Ramsden said Saks spent roughly $1 million on this project, and most of it — including Sun Microsystems, Inc. workstations, Sybase databases and some in-house-designed software — will be reused in different projects.

"The real factor was we had to be the systems integrators," Ramsden said of his information systems staff of about 110. "We learned that putting together all these tools is a really arduous process and can get in the way [of] our abilities to deliver to people."

A data analysis system is critical in retailing because it is so basic to tracking customer trends. The better the analysis system, the more quickly a retailer can track activity and take action such as shifting merchandise from one region to another, analysts said.

Dressed for success

Founded in 1924, Saks Fifth Avenue has annual revenue of $1.4 billion. It operates 52 stores throughout the U.S. and employs 12,000 people.

"Saks is a high-fashion, customer-intimate merchant," said Seth Kranz, a management consultant at the Waltham, Mass., consulting and integration unit of Computer Sciences Corp. in El Segundo, Calif. "So they have to quickly spot the hot and dying trends."

Kranz, a retail consultant who said he had worked on a Saks-related project on a previous consulting job at Coopers & Lybrand, explained that the company's current client/server data analysis efforts, while not trailblazing, do put the store ahead of some other retailers.

Acknowledging the need for a better data analysis system, Ramsden's team shopped last year for a client/server package that could provide data access and analysis capabilities. Saks' mainframe software was from D&B Software, and it was already planning to convert to D&B Software's financial operations client/server software this year or next. So the team checked out SmartStream Decision Support Software, which also works with Sybase databases.

"What they were going to provide was the integration of all the [data access] tools, and having had the experience before, that looked very attractive," Ramsden said.

The team began installing the D&B Software package late last year and will eventually replace both the outdated reporting capabilities of the mainframe software and the first client/server data access system.

IS is now building two systems, or "workbenches"; one aimed at the merchandise group and the other at store managers. About 250 buyers and merchandise staffers have been trained on the merchant's workbench to date, Ramsden said.

The buyers are now in the early stages of analyzing store data to help determine what would sell and how quickly it would move at individual stores.

Briefs

OMG sets up focus groups

The Object Management Group (OMG) last week created two new special interest groups to focus on security issues and the use of object computing in the financial industry. The security special interest group of the Framingham, Mass.-based object technology standards consortium will develop end-user security requirements. The financial group will promote the use of the OMG's standards in the financial community and ensure that standards specifications under development meet the needs of users in the financial services industry.

Defensive client/server

As part of a $150 million contract to rebuild the inventory management and supply system for the Canadian Department of National Defense, SHL Systemhouse, Inc. has announced that it will use Compuware Corp.'s Uniface Six client/server development environment to migrate mainframe applications to a client/server architecture. Under terms of the contract, SHL Systemhouse will use Uniface Six to develop an enterprisewide system to manage distribution, accounting, provisioning and replacement of all supplies to military bases and defense units in Canada and around the world.

[redacted]

Viasoft, Inc. has announced ESW/PC 3.0, software that analyzes Cobol applications.

According to the Phoenix company, ESW/PC 3.0 automatically locates data, screen fields and database fields that will be affected by the century date rollover.

A source code annotation feature lets users perform Cobol edits. The product includes an application scan tool that scans for data, keywords or text strings and posts results on interactive displays.

Prices start at $2,500, and site licenses are available.

▶ *Viasoft*
(602) 952-0050

Pure Software, Inc. has announced Quantify 2.0, performance-improvement software.

According to the Sunnyvale, Calif., company, Quantify 2.0 analyzes a program's runtime behavior and identifies performance problems.

The software supports multithreaded applications, compares two runs at one time and provides a subtree analysis feature that lets users drill down for more specific views of performance data.

Quantify 2.0 costs $1,198 per developer and requires a minimum order of three.

▶ *Pure Software*
(408) 720-1600

ISDNtek has announced the WinISDN Software Development Kit for Microsoft Corp.'s Visual Basic.

According to the San Gregario, Calif., company, the WinISDN Software Development Kit lets developers write Integrated Services Digital Network (ISDN) applications for ISDN cards.

Users can write applications for the Internet, remote access, file transfer, image transfer and voice capture. The kit includes the WinISDN.DLL driver, files and sample routines for a dialer and voice capture.

The WinISDN Software Development Kit costs $199.

▶ *ISDNtek*
(415) 712-3000

Lenel Systems International, Inc. has announced MediaDeveloper VBX, software that lets programmers build multimedia applications.

According to the Fairport, N.Y., firm, MediaDeveloper VBX supports multimedia file formats, lets users create hot spots and plays multiple windows at one time. Features include image printing, Motion Picture Experts Group support, database links and a continuous play option.

MediaDeveloper VBX costs $299.

▶ *Lenel Systems International*
(716) 248-9720

ObjectSpace, Inc. has introduced the Standard Template Library (STL) Toolkit, a commercial implementation of the standard template library for C++.

According to the Dallas company, the STL Toolkit provides multithread extensions, including read and write locking, and is compatible with front-based compilers.

The product includes a test suite, fully commented source code and Threadkit, a cross-platform library that includes classes for threads, semaphores and object locking.

STL Toolkit costs $149 or comes bundled at no extra cost with ObjectSpace's ObjectSystems C++ framework.

▶ *ObjectSpace*
(214) 934-2496

Language Systems Corp. has announced the LS Fortran compiler for Power Macintosh.

According to the Sterling, Va., company, LS Fortran for Power Macintosh runs in the Macintosh Programmer's Workshop and compiles Fortran programs that run at full native speeds on Apple Computer, Inc.'s Power Macintosh.

The product is source code-compatible with Language Systems' LS Fortran 3.3 compiler.

LS Fortran for Power Macintosh costs $695.

▶ *Language Systems*
(703) 478-0181

Sheridan Software Systems, Inc. has announced the Sheridan Visual Developers Suite, a development kit for Microsoft Corp.'s Visual Basic.

According to the Melville, N.Y., company, the Sheridan Visual Developers Suite is made up of VBAssist, Data Widgets and Designer Widgets, add-ons to Visual Basic.

VBAssist includes productivity tools; Data Widgets provides data controls for database front-end development; and Designer Widgets provides custom controls.

The Sheridan Visual Developers Suite costs $349.

▶ *Sheridan Software Systems*
(516) 753-0985

Vireo Software, Inc. has announced VtoolsD 1.1, a virtual device driver tool kit for C and C++ developers.

According to the Boiton, Mass., company, VtoolsD 1.1 eliminates the need to use Microsoft Corp.'s Device Driver Kit to build virtual device drivers.

The product targets virtual device drivers for Microsoft's Windows for Workgroups 3.11 and supports many of the features expected in Windows 95. Also, a PE to LE converter feature lets users create virtual device drivers with the 32-bit Borland International, Inc. C++ compiler.

VtoolsD 1.1 costs $495.

▶ *Vireo Software*
(508) 779-8352

Relativity, Inc. has announced Relativity for Micro Focus Cobol, a relational database tool.

According to the Austin, Texas, company, Relativity for Micro Focus Cobol provides direct access to Cobol data without requiring gateways, data warehousing or replication.

Developers can use the product to integrate legacy Cobol data and applications with open client/server systems.

Relativity for Micro Focus Cobol costs $4,995.

▶ *Relativity*
(512) 343-1010

Product shorts

Cole Software has announced Extended Debugging Control (XDC) 3.0, an object debugging tool. XDC 3.0 isolates and repairs bugs in assembler code, works on MVS programs and supports CICS and Cobol. Cost: starts at $15,000. Cole Software, Oakton, Va. (703) 242-8354 ... **Micro Focus, Inc.** has introduced a CICS Option for 32-bit OS/2. The product allows Cobol and PL/1 programmers to build and test CICS applications in 32-bit OS/2. Cost: $1,250. Micro Focus, Palo Alto, Calif. (415) 856-4161.

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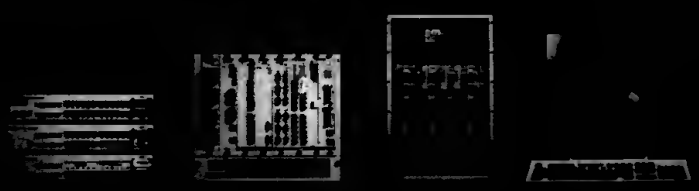

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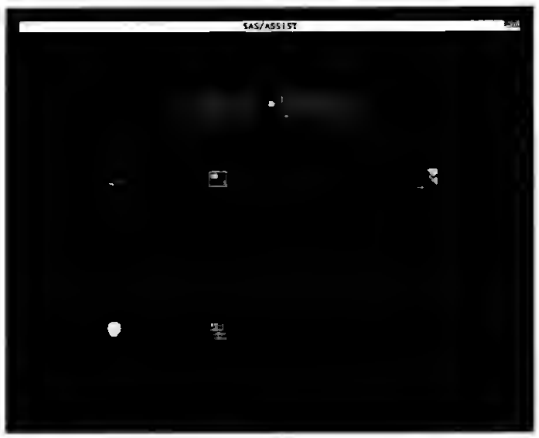

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Acquired SKILLS
Early involvement is critical for managing the IS side of a corporate merger
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Coming back for more

Steve Cuatto

PIZZA HUT'S DAN COOKE SAYS IS'S CHALLENGE IS TO ROLL OUT SYSTEMS THAT CONTRIBUTE TO QUALITY

By Brian McWilliams

When Pizza Hut, Inc opened its electronic storefront (http://www.pizzahut com) on the Internet's World-Wide Web last August, the project may have looked like information systems fiddling around while the Romano cheese burns

With corporate profits down 15% on the year, Pizza Hut's pilot — initially limited to residents of Santa Cruz, Calif. — generated fewer than 10 orders per week. That barely covered the cost of the PC server, says Dan Cooke, vice president of MIS at Pizza Hut, a subsidiary of PepsiCo, Inc. in Purchase, N Y.

Yet Cooke sees the company's foray into cyberspace as a success, and Pizza Hut is readying plans for Internet ordering in other markets "Our goal is to be wherever our customers are," he says.

Coming back for more, *page 102*

Coming back for more

CONTINUED FROM PAGE 101

Like its sister companies in PepsiCo's restaurant division, Taco Bell and KFC Corp., Pizza Hut is the world's No. 1 chain in its food specialty in revenue and is considered a technology leader in the fast-food business. But profits at all three chains have cooled lately, causing some analysts to declare the restaurant division — which is the world's largest restaurant system — a drag on PepsiCo stock. As the chains fight to stay on top, IS will be under the gun to deliver systems that can bolster the company's financial performance.

As a result, finding — and retaining — customers worldwide has become the new mantra of corporate strategists at Wichita, Kan.-based Pizza Hut. According to Chief Operations Officer Pat Williamson, the company has been "operations driven" in the past. But today, Pizza Hut focuses less on wringing costs out of the system and more on keeping customers of its ubiquitous red-roofed restaurants and delivery services happy.

"Our mission is 100% customer satisfaction," Williamson says.

The emphasis on quality and service at the nation's largest quick-service pizza restaurant comes none too soon. In the latest consumer survey by the industry's leading voice, *Restaurants and Institutions* magazine, Pizza Hut slipped from its perennial position as America's top-ranked pizza parlor chain. Even Williamson concedes that the company is not treating customers well enough. "Our ratings on product quality are not at an acceptable level," he says.

Beyond paperless

For Cooke and his 200-member IS staff, the changing corporate strategy means IS must redirect many of its priorities. Like many major players in the fast-food industry, Pizza Hut has invested heavily in point-of-sale (POS) systems and in automating back-of-store operations — all in pursuit of the so-called paperless restaurant. The challenge now is to quickly roll out systems that can contribute to quality and, ultimately, build the top line as well.

"Consumers want convenience and value more than anything right now," says Raj Chaudhry, editor of "Chains Update," an industry newsletter published in Mount Prospect, Ill. "The challenge for Pizza Hut is to stay relevant to changing consumer tastes."

One significant early example is Pizza Hut's customer satisfaction measurement system, which went on-line a month ago. Taking a page out of the playbook of Lexus and other masters of customer retention, Pizza Hut has begun calling thousands of customers each week to get feedback on their dining experiences.

The system is built on Pizza Hut's impressive customer database, which the company has used for years to track the buying patterns of more than 25 million delivery customers. Each week, the new system downloads a representative set of 50,000 customer names and phone numbers to The Gallup Organization. Gallup polls those customers on speed of service, quality of food and repurchase willingness. The results are represented in a "loyalty index," which is used to calculate management bonuses from the chief executive officer to store managers.

> **Fast-food restaurants can be viewed as small manufacturing and assembly plants supported by "applications that are every bit as complex as those in manufacturing, banking or medicine."**
>
> Ken Harris, president of IS at KFC

The system's hefty price tag — approximately $5 million per year, according to Williamson — may raise some eyebrows in the cost-sensitive industry. But the company's research shows that a customer is worth $7,200 over his lifetime, making the new system "worth more than any marketing program we could ever come up with," Williamson says.

Whether Pizza Hut can translate customer survey data into improved quality and profits remains to be seen. But Cooke says his group will use the feedback to refine restaurant control systems and processes. If customers report their pizzas weren't delivered hot enough, for example, IS can rewrite the code that controls baking and delivery routing.

Pizza Hut's experience shows that the value equation — quality of product divided by price — is still the driving force in the quick-service restaurant industry today. But more companies may follow Pizza Hut's lead in rethinking how to deliver value to consumers.

"Many chains have already pushed the decommitment as hard as they can," says Jim Schwartz, former chief financial officer and now president of National Pizza Corp. in Pittsburg, Kan., the largest Pizza Hut franchisee with 350 units throughout the Southeast.

"Our franchisor has historically overemphasized price as a driver of value, and they found that was not the answer. While they [Pizza Hut] have focused on cutting labor and food costs, we [National Pizza] have focused more on the quality of product, service and experience in our stores," Schwartz says.

Recipe for success

Operating results at National Pizza's Pizza Hut units — which Schwartz says show profits up 20% in 1994 despite a 5% decline in sales — suggest the franchisee's approach to value is working. But if National Pizza has discovered a formula for balancing quality and price, it hasn't figured out how to apply it to its Skipper's seafood restaurants. Last month National Pizza announced it was closing 95 of its Skipper's units after efforts to improve products and service failed to staunch falling sales.

Coming back for more, *page 106*

PIGGING OUT AT PEPSICO'S RESTAURANT DIVISION

KFC
Louisville, Ky.

Total sales (1993)
$7.1 billion
8,633 stores worldwide
(6,125 franchised/licensed)
Share of U.S. chicken restaurant market: 39% (No. 1)
IS staff: 180

Pizza Hut**
Wichita, Kan.

Total sales (1993)
$6.4 billion
10,433 stores worldwide
(4,812 franchised/licensed)
Share of U.S. pizza restaurant market: 19% (No. 1)
IS staff: 200

Taco Bell***
Irvine, Calif.

Total sales (1993)
$3.9 billion
4,021 stores worldwide
(1,847 franchised/licensed)
Share of U.S. Mexican-style restaurant market: 70% (No. 1)
IS staff: N/A*

* Not available

Total PepsiCo restaurant division

Units: 24,327 (largest in world)
Sales: $17.4 billion
Fast-food market share: 15% (No. 2)

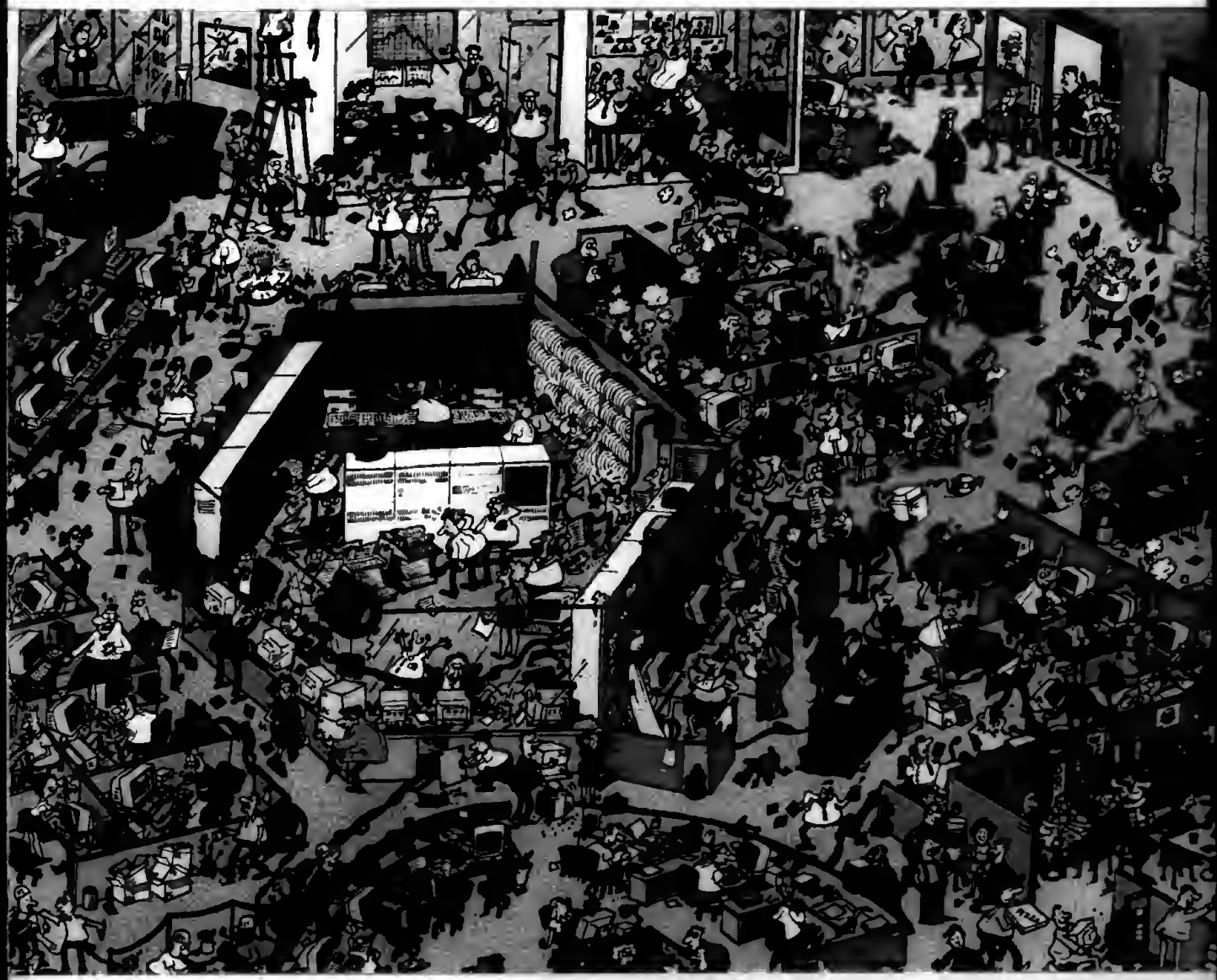
** Including 167 D'Angelo sandwich shops and six East Side Mario's shops
*** Including 246 Hot 'n Now shops and 41 Chevys shops.

Fifty percent of restaurant meals are now consumed off-premises via drive-ins, take-out windows or delivery services.
(Source: National Restaurant Association, Washington)

Restaurant Help Wanted

TACO BELL, one of the fast-food industry's biggest success stories in recent years, has been rocked by executive changes in the past year, including the departure last summer of celebrated CIO Susan Cramm, who became CFO at PepsiCo's Chevys chain. Last week, Taco Bell was still operating without an executive in charge of IS. It has engaged McKinsey and Co. to review its business and technology strategy, according to a company source who requested anonymity.

Who's In Charge Here?



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You won't be expected to get rid of the old PC either. We can do everything from cleaning off its hard drive and removing its asset tag to physically hauling it away.

And with our EPA-compliant computer disposal process,[B] that dead PC won't come back to haunt you in the form of a costly fine.

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Coming back for more

CONTINUED FROM 102

To be sure, operations efficiency remains critical to success in the fast-food industry. Fast-food restaurants can be viewed as small manufacturing and assembly plants, says Ken Harris, vice president of IS at Louisville, Ky.-based KFC. They are supported by "applications that are every bit as complex as those in manufacturing, banking or medicine," Harris says.

Most big chains today have systems that were developed in-house, such as KFC's manager's workstation and Pizza Hut's field management system. Each provides a suite of applications to assist store managers in business forecasting, inventory management and human resources management. Such systems alert managers to potential problems and are networked with headquarters to enable the company to monitor individual store performance.

The goal of such technology is "to drive costs out of the system and keep management focused on employees and the customer," says Ron Paul, president of Technomic, a Chicago-based retail technology consulting firm.

PepsiCo's Taco Bell chain, the industry's pioneer in implementing such paperless management systems, owes the success of its value-oriented business strategy to technology, Paul says. Soon, the Mexican-style restaurant may even eliminate human cooks from its units; the Irvine, Calif.-based company is reportedly testing robot-like machines that can make burritos and tacos.

Across the fast-food industry, handheld, wireless order devices are showing up in many restaurants. To make POS systems more friendly to the largely part-time, high-turnover restaurant workforce, companies such as Park City Group in Park City, Utah, are building technology — artificial intelligence, wizards and metaphor-based graphical user interfaces — into their retail management systems.

> "Our franchisor has historically overemphasized price as a driver of value, and they found that was not the answer. While they [Pizza Hut] have focused on cutting labor and food costs, we [National Pizza] have focused more on the quality of product, service and experience in our stores."
>
> Jim Schwartz, chief financial officer at National Pizza, the largest Pizza Hut franchisee

Integration has been complicated by the fact that franchisees are free to choose their technology platforms.

And increasingly, specialized commercial applications are becoming available to manage restaurant seating and other tasks.

Mass appeal

But some industry leaders may have already become as efficient as possible under the paperless systems. KFC fired its chief executive officer last July after the chain posted several quarters of disappointing profit performance. The focus today is less on delivering systems that can increase what it calls "chicken efficiency" and reducing food and labor costs.

Instead, IS is looking at ways for technology to increase store traffic and customers' purchases.

"If your systems are set up to report on bottom-line results only, people will focus there," says Jim Crogan, manager of KFC's restaurant support services.

Good salesmanship

To get everyone in the company focused on increasing sales in its 2,900 company-owned stores, KFC is restructuring its reporting systems to track repeat business and other sales performance indicators, Crogan says. They help the company get more product across the counter. The system spots unusual orders, such as a chicken meal without a side dish, and prompts cashiers with a "suggested sell," an extra menu item that can complete the meal and pad the check in the process. This is a new frontier for many store managers, whose responsibility has traditionally been profits, not sales.

Driving the top line at KFC will mean developing systems that improve KFC's customer-to-cashier interactions, according to Tom Romano, manager of USA restaurant systems. KFC's new generation of PC-based POS terminals do more than increase speed and consistency of service; they use the "suggested sell" component.

To sail down a position in the so-called home-meal replacement market, KFC announced it is launching a home delivery service this year. The company has toyed with delivery in the past but lacked the information systems to support the strategy, according to Chris Duncan, director of finance for the home delivery project. According to the Washington-based National Restaurant Association, 50% of restaurant meals are now consumed off-premises via drive-ins, take-out windows or delivery services.

The latest incarnation of KFC's home delivery system features a custom-written, client/server Unix application that runs on 486-based servers. "We are throwing resources after this," Duncan says. "I have never seen this company so focused on its priorities."

Staying focused will be a competitive necessity for all three chains in PepsiCo's restaurant division. According to the National Restaurant Association, fast-food prices have been rising at less than half the rate of inflation for the past several years. As price pressures and changing consumer tastes spur Pizza Hut, KFC and Taco Bell to refine their competitive recipes, IS managers will be expected to quickly deliver hot and value-priced applications that support them. ■

McWilliams is a freelance writer in Durham, N.H.

THE MEASURE OF LOYALTY

Last month, Pizza Hut launched a new program to monitor customer satisfaction on a weekly basis. The program uses the company's impressive customer database system, which Pizza Hut has used to track the buying patterns of more than 25 million delivery customers.

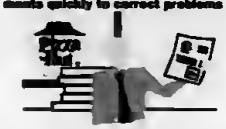
1. Customer buys pizza (delivery or dine-in)

2. POS information (name, address, phone, order details) is added to 25 million customer database in Wichita, Kan., headquarters

3. 80,000 customer records are downloaded to Gallup each week for a three-minute phone survey with each customer

4. Survey data is uploaded and tabulated by system; repurchase willingness ("loyalty index") calculated for each customer

5. Survey results available for on-line management decision support; company can make operational adjustments quickly to correct problems



6. Annual bonuses for management tied to improvement in loyalty index (target: 10% improvement annually)

BILL OF "UNFAIR"

A full menu of heartburn-producing items faces fast-food IS managers

- **Tight IS budgets.** The typical fast-food chain puts a relatively small percentage of sales back into IS. Industry leader McDonald's Corp. (No. 64 in Computerworld's Premier 100 ranking) invests about 9% of gross revenue on technology, but most chains try to get by with budgets half that size. Taco Bell, for example, spends just 4% on IS. (Source: Company spokesman who requested anonymity.)

- **Scarcity of good commercial applications and hardware specifically for fast-food restaurants.** "This is a tough market for vendors to understand," says Mike Pappas, editor of "Computers, Foodservice, and You," a newsletter based in Raton, N.M. Many POS systems, for example, are just repackaged grocery store terminals.

- **Complex organizational structure.** Besides company-owned restaurants, big chains consist of units owned and operated by franchisees who are usually free to select their own technology platforms. Thus, corporate IS leaders have a difficult time building enterprisewide systems.

> Pizza Hut's "loyalty index" system comes with a hefty price tag — about $5 million annually. But with each customer worth $7,200 over his lifetime, the new system is "worth more than any marketing program we could ever come up with."
>
> Pat Williamson, chief operations officer, Pizza Hut

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For IS managers facing A MERGER OR ACQUISITION, a smooth transition depends on early involvement and knowing the value of both systems and staffs

SKILLS

By Leslie Goff

Girard Liberty is no stranger to mergers and acquisitions. So when his company recently acquired Bama Foods Products, inc. in Birmingham, Ala., from Borden, Inc. in Columbus, Ohio, he knew just what to do.

Having been through a few acquisitions as director of information systems at Welch Foods, Inc. in Concord, Mass., Liberty knew the importance nf working out an IS merger strategy as early as legally possible.

That means getting involved dnring the due diligence period. That's right before the signing of the deal, when the two companies work out the details.

Early involvement by senior IS managers can be critical for a successful acquisition — and the managers' own survival. For example, Bama had relied nn centralized Borden systems for most of its critical applications, and Welch's had only three months to migrate Bama's applications and meld the two companies' IS infrastructures. Liberty and his staff had to assess Bama's IS assets, devise a migration strategy and come up with an IS human resources plan.

"The acquiring company must have senior IS people involved in the due diligence period because it has a lnt tn do with the timing of a smooth transition," Liberty says. "We had to ensure that we could work well with the Borden people and to determine what Borden systems Bama was nsing and what internal systems it had. It takes a lot nf planning up front."

Help is needed

IS is nne nf the most heavily impacted organizations in a merger nr acquisition — often facing difficult consolidations and possible layoffs. But there are resources designed to help the acquiring chief information nfficer and the acquired IS management cope (see story below).

The process is complicated, however, because bringing lower levels of management into the negotiatinn and evaluation stage can wreck the deal. Meanwhile, advance planning by senior IS management is encumbered because nothing can be considered nfficial until the deal is legally signed, says Robert Laskey, vice president of Positive Support Review, inc. in Santa Monica, Calif., a firm that consults in merger management.

"There are legal ramifications of [the CIO from the acquiring company] contacting the other side," Laskey explains. Moreover, "the emotional aspects of a merger are such that if you bring in parties below the top rung of executive management, you can have backlash. The change is threatening [to employees of the company being acquired], and you may have a ripple effect up through the organization," he says.

Consequently, the two companies often bring in consulting firms to act as objective liaisons.

"Frankly, people are usually looking for real bottom-line stuff — strategic directinn, where they can cut costs, where there are synergies," he says. "Secondarily, they're looking at where they need to provide systems support."

In the case of the Bama Foods acquisition, although Welch's faced a tight deadline, the two companies each used IBM mainframes and AS/400s, so Welch's migrated Bama's applications as they were. Most were centralized applications running on Borden systems in Columbos, with some localized AS/400 applications in Birmingham. The applicatinns included homegrown and shrink-wrapped software.

At the same time it was migrating Bama's applicatinns, Welch's was trying to hring the Birmingbam operations over tn its way of conducting business, Liberty says. For instance, Welch's is completely networked across all of its locations and uses primarily 486- and Pentium-based PCs and Microsoft Corp.'s Office suite nf productivity applicallons. Bama had a few stand-alone, DOS-based PCs.

"The training effort has been pretty significant, and we've had nur IS people and networking staff go down there," Liberty says. Welch's installed Pentium-based PCs running Windows and Office in a network throughnnt the Birmingham subsidiary. Liberty also hired a local IS manager who reports to Bama's vice president and general manager.

"That will help with the transition," he says. "That manager will

Acquired skills, *page 110*

LEARNING BY EXAMPLE

Training resources are available to help IS managers cope with a company merger or acquisition

Senior IS managers should take a broad approach in preparing for a merger or acquisition, according to CIOs and consultants. A training menu could include courses or workshops in change management, project management, human resources and IS cost assessment. But the best education is experience.

Girard Liberty, director of IS at Welch Foods, says he garnered much of his expertise through the experience of others and self-instruction by attending professional meetings and networking with other IS professionals in similar situations. And having been through a few mergers and acquisitions certainly hasn't hurt the education process. "Any large company over time will have mergers or acquisitions, so you can always find people with that experience," he says.

Local chapters of the Society for Information Management (SIM) will help both members and nonmembers organize roundtable discussions on the topic. SIM has 30 chapters worldwide. Annual chapter membership fees are $125 for individual corporate members, plus varying local chapter fees. For information, contact Christine Hinz, chapter manager, SIM International, 111 East Wacker Drive, Suite 600, Chicago, Ill. 60601, or call (312) 644-6610, ext. 3224.

Other groups that arrange roundtable discussions include Omicron, a consortium of East Coast IS executives, and the Chicago Research and Planning Group (see story page 110). Omicron sponsors executive "interchanges" on topics that members request. For information, contact Jim Webber, Omicron, Mountain Lakes Business Park, 115 Route 46, Building D-31, Mountain Lakes, N.J. 07046, or call (201) 335-0240.

The American Management Association in New York, offers a general course on dealing with mergers and acquisitions designed for CEOs, chief financial officers, corporate planning directors, company presidents and other high-level managers. Topics include designing checklists for the screening and evaluation process, inventory valuation and how to mesh corporate cultures.

The association holds the course at sites throughout the country. Locations through April include San Francisco, Sanibel Harbour, Fla., Las Vegas, Atlanta, Chicago and New York. The course costs $2,795 for members and $3,215 for nonmembers.

SIEMENS
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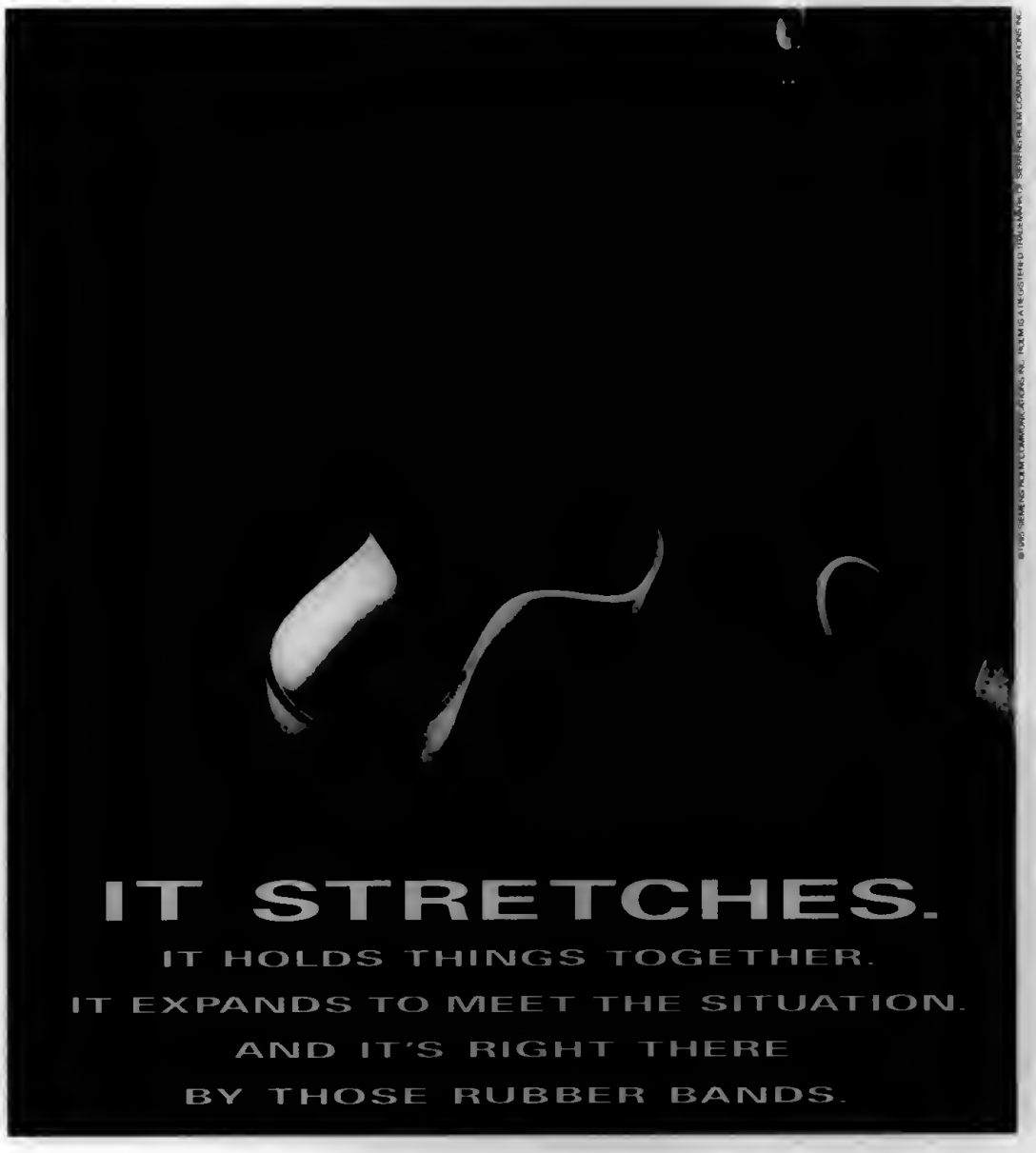

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Acquired skills

CONTINUED FROM PAGE 108

be trained in Welch's systems and will be the on-site support person. But most [information technology] support will come from central IS."

COMPARING NOTES

Whether working through a consultant or face-to-face, top IS management on both sides of a merger or acquisition should focus on three areas during the due diligence period:

Efficiency: Assessing the overall cost and operating structures of each IS organization.

Equipment: Finding the synergies of the respective systems.

Staff: Measuring the depth and quality of each staff's skills base and management team.

Source: Robert Laskey, vice president, Positive Support Review

Acquiree or acquirer?

In general, how you approach the issues of staffing and equipment depends on two factors: Is this a merger or an acquisition? And, which side of the table is your company on?

"Each situation is very unique," Laskey says. "They have common themes, but the outcomes are driven by business strategy."

If two companies merge, relations between the CIOs from each company may be less strained, with an emphasis on keeping as many team members from each company as possible. In an acquisition, however, the common wisdom is that the acquired IS organization will essentially disappear or be absorbed.

The negotiation strategy for senior IS managers depends on where they sit in the deal. IS management at a company being acquired will want to prove the value of its IS assets and staff, while IS management at the purchasing company may want to validate and hang on to its own systems and staff.

Potential snags lie in the discovery process, as the two IS management teams try to place a value on their respective systems.

"Often, the company with lower costs has the best systems, and unfortunately, platforms may be incompatible. That causes some consternation because the IS management at the buying company becomes very concerned that their systems portfolio doesn't match up well and carries higher costs . . . or the other way around," Laskey says.

In most acquisitions, the acquiring company's IS management will usually have the upper hand. The company may want to merge or bridge the systems but not necessarily the staffs. The team at the company being purchased has two choices, Laskey says: "Stand on the corner and fight, or roll over. The essential thing is to position your organization in its best strategic and positive light. I've seen some cases where the surviving organization was the acquiree. So have a prospectus of your business systems or you can lose the battle right there."

Concrete proof

At companies being either purchased or merged, CIOs must show where IS adds value to the company, stresses Frank Diaz, a veteran of three acquisitions who now operates a consulting company in Phoenix and Chicago.

"You have to assess the value of your organization system by system and take time to educate the acquiring company about your systems," says Diaz, who was president, chief executive officer and CIO at Kemper Services Co., an outsourcing firm for the financial services industry, when it was acquired by Canseco Insurance last year.

"If you can't show value, you're dead. But the worst thing you can do is stick your head in the sand. You may be eliminated as a result of the process, but you have an obligation to ensure smooth transition for your staff. For people who are displaced, you need to provide resources for other opportunities," Diaz says (see story below). ■

Goff is a freelance writer in New York.

AN EITHER/OR PROPOSITION

An IS manager has a 50-50 chance of surviving a merger or acquisition. Training and networking opportunities are available for those who don't.

The unfortunate reality for senior IS executives in a merger or acquisition is that they run a 50-50 chance of losing their jobs, notes Dick Arns, executive director of the Chicago Research and Planning Group, a consortium of IS executives throughout the Midwest that provides members with a variety of training and networking opportunities.

In response to the wave of corporate consolidations, the group this year launched the CIO Resource Pool, which offers displaced member CIOs consulting opportunities with other companies. The premise is that one of these high-level consulting jobs will lead to a permanent offer. After just three months, 20 CIOs were participating in the Resource Pool.

"With a lot of [mergers and acquisitions], the companies end up downsizing, and a key area is melding the two technology offerings," Arns says. "Normally, there will be a CIO on one side who will be looking for greener pastures. [Mergers and acquisitions] aren't going away, and multiple CIOs are being displaced. The Resource Pool ends up being a very exclusive group that the membership can pick and choose from."

For information on membership, contact Arns at (708) 381-9128, or write the Chicago Research and Planning Group, 421 N. Northwest Highway, Suite 201, Barrington, Ill. 60010.

Calendar

Gartner unveils '95 lineup

From strategies to storage, vision to evolution, Gartner Group, Inc. will offer insights into a variety of information systems trends, themes and topics at its 1995 conferences.

Opening the consultancy's conference series this year is "Transition to the New Computing Environment," Feb. 22-24 in San Diego. Other conferences for the first half of the year include the following:

- "Personal Computing: Building the Enterprise from the Ground Up," March 29-31 in San Antonio.
- "Storage: Serving the Enterprise," April 19-21 in Tucson, Ariz.
- "Client/Server Computing: The Next Generation," May 1-3 in Fort Lauderdale, Fla.
- "Crystallizing IT's Business Vision: Oasis or Mirage (Real Decisions Conference)," May 8-10 in Palm Springs, Calif.
- "Development 2000: Building the Next Generation of Applications," May 22-24 in Atlanta.
- "Asset Management: Financially Leveraging the Shift to Cooperative Computing," June 5-7 in San Jose, Calif.
- "Networking and Connectivity: Maximizing Architectures, Investments and Organizational Effectiveness," June 14-16 in Chicago.
- "Reshaping IS," July 13-14 in Chicago.
- "Integrated Document Systems: Redefining the Business Value Chain," also July 13-14 in Chicago.

For information or to register, contact Ashley Pearce, Gartner Group, 56 Top Gallant Road, P.O. Box 10212, Stamford, Conn. 06913-0326, call (800) 778-1987, or message via the Internet at apearce@gartner.com.

MARCH 12-18

Uniforum '95. Dallas, March 12-16 — Keynote speakers include Ed McCracken, chief executive officer, Silicon Graphics, Inc.; Robert Frankenberg, CEO, Novell, Inc.; and Bruce Tognazzini, engineer, SunSoft, Inc. Call: The Interface Group, Needham, Mass. (617) 449-6600.

Managing the Information Resource: Information Technology and the New Value Equation. Los Angeles, March 12-17 — Forum focuses on frameworks, techniques and skills necessary to align information technology with the needs of business. Contact: Marcie Desmond, Cambridge Technology Partners, Cambridge, Mass. (617) 374-8702.

13th Annual National Conference on Ada Technology. Valley Forge, Pa., March 13-18 — Contact: Rosenberg & Risinger, Culver City, Calif. (310) 397-6338.

Toward an Electronic Patient Record '95. Orlando, Fla., March 14-19 — Eleventh international symposium on the creation of electronic health record systems and global conference on patient cards. Keynote presentations include "Cutting the Hype: Real Life Demonstrations of Today's Capabilities" and "Focus on the Patient: Effects of Changing Technology on the Patient." Contact: Medical Records Institute, Newton, Mass. (617) 964-3923.

MARCH 19-25

Life Office Management Association Systems Forum and Exhibit 1995. Orlando, Fla., March 19-22 — Life insurance industry conference features more than 800 management and technical sessions in areas such as data security, client/server and LANs. Contact: Guide International, Chicago, Ill. (312) 245-1599.

National Fiduciary and Securities Operations Conference. Orlando, Fla., March 19-22 — Features 30 concurrent sessions divided into five categories: management, securities, products and services, technology and global custody. Contact: American Bankers Association, Washington, D.C. (202) 663-5000.

Object World. Boston, March 19-23 — Contact: IDG World Expo, Framingham, Mass. (508) 879-6700.

MARCH 26-APRIL 1

National Automated Clearing House Association 1995: Electronic Payments, Business Solutions. New Orleans, March 26-29 — Conference focuses on radical changes in the way corporations, consumers, governments and financial institutions exchange information and payments. Contact: National Automated Clearing House Association, Herndon, Va. (703) 742-9190.

NOTES READY

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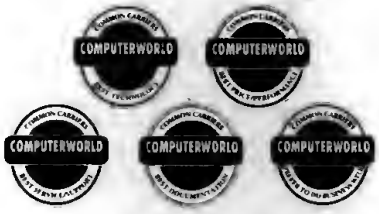

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Beyond remote access

Users are demanding simpler, faster ways to stay in touch with their office systems. Today they have limited choices. But Windows 95 and the Internet may soon change all that.

Give them an inch, and they'll take a mile.

As more and more users become accustomed to gaining access to their company's client/server networks from the airport, home or wherever they happen to work, support requirements increase.

"Remote access alone is eating up about 40% of my time right now," estimates William Santille, a vice president of communications at Harris Bank Corp. in Chicago.

Such demands require information systems managers such as Santille to carefully track changing PC communications software technology and press vendors for more secure, easy-to-administer products.

Software to access PCs and LANs over phone lines currently falls into four categories: remote control, remote node, single application and dial-up router (see chart page t14).

This Guide contrasts remote control and remote node technology and provides user analyses of the leading remote control packages — Symantec Corp.'s PCAnywhere for Windows, Microcom, Inc.'s Carbon Copy for Windows and Traveling Software, Inc.'s LapLink for Windows (see Buyers' Scorecard page 116).

Our hands-on product test-drive also puts the newest remote control release, Norton-Lambert Corp.'s Close-Up 6.0, through its paces (see story page t20).

In Firing Line (page 118), corporate users evaluate how well Lotus Development Corp.'s Notes provides remote communications within its environment as an alternative to traditional remote access software.

We also look at what the future will hold for remote access with a preview of how the technology will be folded into Windows 95 and work through the Internet and wireless products (see story page t t5). We also show the steps some vendors are taking to make remote access more secure (see box page 120).

The demands are growing stronger. The technology is shifting gears. Take advantage of this opportunity to learn about what products will fit your users' needs.

Basic remote control gives way to new LAN-based software

BY LYNDA RADOSEVICH

Most users are familiar with remote control products that allow them to control their desktop system hy hooking up a remote computer over a phone line. They may be less aware of remote node software, which makes their remote system a node on a LAN.

If you're an IS manager, chances are you would prefer the node approach because it uses network security systems and costs less. But most users have adopted remote control software because it's faster and is traditionally aimed at file transfer, the main goal of many remote users.

The technical differences between the two setups are as follows: In a remote control setup, software is installed on both local and remote computers that allows one to control the other over a phone line. The host machine does all data processing and LAN access, and only the screen and keyboard changes pass through the lines to the remote machine. On the other hand, in a remote node scheme, a user logs on to a LAN using the phone line as an extension to the network. Typically, a remote access server links to a LAN through a network interface card and connects to remote computers through a bank of integrated modems. All the normal LAN traffic flows over the phone line.

Typically, using a remote node is less expensive than remote control because it can dial directly into the network rather and doesn't need another computer to complete LAN access. Also, the remote node requires less end-user training because, for the most part, a remote LAN node acts just like a local one.

"We wanted the person in the remote situation to look and feel as if he were there," says Gary G. Pan, a consultant for the Department nf Labor's Employment Standards Administratinn in Washington. He uses Norwood, Mass.-based Microcom, Inc.'s LAN Express remote node servers to give investigative officers access from case sites to the department's Unix networks. "We're not interested in remote control. It ties up too many resources," Pan says.

TODAY

However, remote node has its hitches. Even with the fastest modems, data creeps along at 28.8K hit/sec. vs. the relatively speedy 2M to 3M bit/sec. rate it travels on LANs.

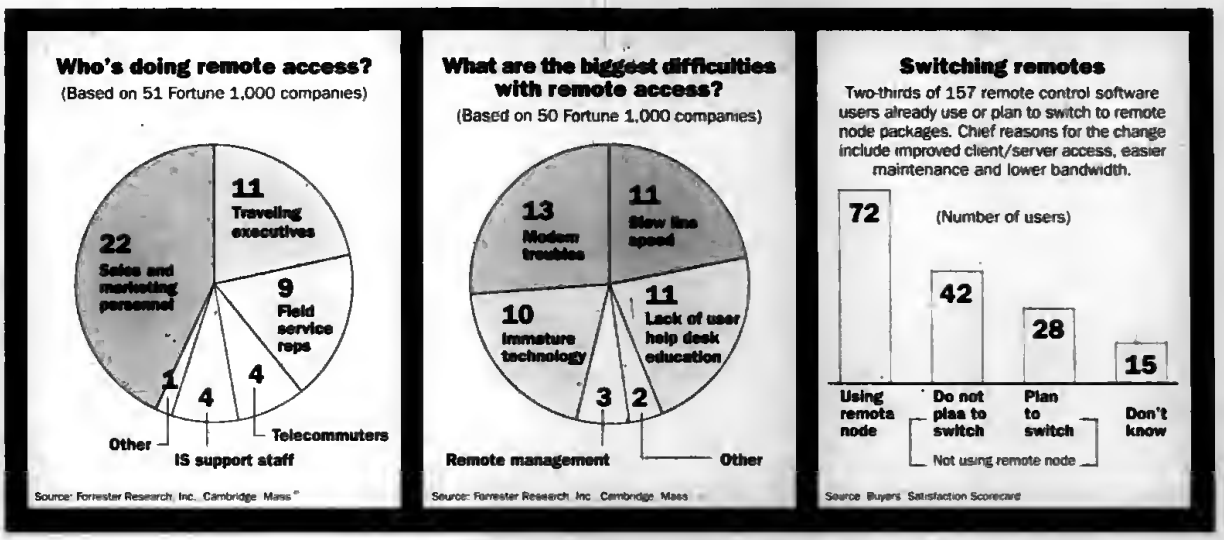
While that's OK for sending short electronic-mail messages or tidy word processing files, large data queries and file transfers can be mind-numhingly slow.

Remote control software, on the other hand, is faster for many data transfers because the processing and file transfers are done locally, and only the screen and keyboard updates move nut. Also, users on each side of a remote control setup see the same screens, which is handy for providing remote users with technical support.

The best solntinn is perhaps a merging of the two technologies, which a few vendors offer. For example, Shiva Corp. in Burlington, Mass., and Microcom have built remote control access into their remote node servers. This lets a user dial in to a LAN and log in as a remote node. Then, in the same session, the user can switch to remote control if he needs to move large data

REMOTE ACCESS METHODS

Method	Leading vendors	Pros	Cons	Cost per user	Cost per port
Single application packages have remote access support built in.	Lotus' CC: Mail, Microsoft's Mail	Simple, low cost	Limited to communications within the application's own environment	Varies	Varies
Remote node software and hardware permit users to dial in to a LAN-connected server and access network services — such as file and print — as if they were working locally.	Shiva's LAN Rover, Novell's NetWare Connect, Digital Communications Associates' DCA/Remote LAN Node, 3Com's Centrum	Cost-effective, scalable; fits in wiring closet	Poor performance with data-intensive applications	$80	$825
Remote control software lets users dial in to a PC and take over its functions. In remote control, only the host PC's keyboard and screen updates are sent over the phone lines. All processing is done on the host PC.	Microcom's Carbon Copy, Symantec's PCAnywhere, Cubix's ERS/FT Connect, J&L Information Systems' Chatter Box	Good performance with many data applications	High cost; security features are limited	$100	$1,000
Dial-up router periodically connects remote LANs.	Telebit's Net Blazer, Cisco's Access Server 2500 series, Rockwell Network Systems' Net Hopper	Easy to use and implement	LAN-to-LAN only	Varies	Varies



chunks.

This combination works well for KFC Corp. in Louisville, Ky. The food chain's field market managers must get daily information on the retail stores they manage. To do so, they use several types of remote access, including mainframe dial-up, UUCP for Unix, direct dial-in and Lotus Development Corp.'s CC:Mail remote and remote control programs.

"About three years ago, I began looking for a single dial-up access method," says Kent Westphal, network manager at KFC. "I found remote node suited some applications, remote control suited others."

KFC's Kent Westphal *chose Microcom's LANExpress as a one-size-fits-all method of dial-in access*

Westphal says he picked Microcom's LAN Express remote node/control server to give roughly 300 market managers one dial-in method to access all the information they need.

Buyers of remote access software today have more choices than ever. In the past year, Novell, Inc., 3Com Corp. and Cisco Systems, Inc. have all entered the market. But the way to determine the best product is to assess user needs. ■

Radosevich is a freelance writer in Belmont, Mass.

Windows 95 plus the Internet will broaden access options

TOMORROW

BY LYNDA RADOSEVICH

Like everything else in the universe, remote access is being built into Microsoft Corp.'s Windows 95. Rather than navigating through arcane software, users will reportedly be able to click on an icon to access distant LAN servers and automatically retrieve files.

On the back end, Windows 95 will work with remote access servers from Novell, Inc., Shiva Corp. and, of course, Microsoft. Industry veterans expect Microsoft's entry to fire up the remote access market because millions of end users will presumably have remote access capabilities at their fingertips.

However, the market is not waiting for Microsoft. Shiva, which provided Microsoft with the Windows 95 remote access technology, is filling in the end-user software gap by distributing free client software with its remote access servers.

"Windows 95 is less important now than it was six to nine months ago," says Jay Batson, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Microsoft is also building Internet support into Windows 95. This event, coupled with the fact that some Internet providers are building private TCP/IP wide-area networks that use the Internet as a backbone, will create a virtual private network that corporate users can access from their desktops to go anywhere the Internet goes.

The Internet vendors include Advanced Network & Services, an Internet backbone provider purchased by America Online, Inc. last November, and UUNet Technologies, Inc. in Falls Church, Va., which is building Microsoft's on-line network, according to Batson. However, so far these networks support only the IP protocol, and most firms run Novell's IPX protocol. AT&T Corp.'s NetWare Connect service, an IPX WAN under development, may fill that gap, Batson says.

But for exceedingly mobile workers, any kind of wired connection is too limiting. For instance, a salesman may want to pull up pricing information while at a client site without excusing himself to find a data jack. IS managers say they pin their hopes on Cellular Digital Packet Data (CDPD), which sends digital data over existing cellular phone channels.

After a hype-filled introduction more than two years ago, CDPD has been slow to spread to all parts of the U.S. It may still be too costly for now, but in a year or two, it could be a key technology, users say.

Another rapidly emerging prospect is Integrated Services Digital Network (ISDN), a high-speed digital technology that works over phone lines. Like CDPD, ISDN is available only in certain cities and will not be viable for traveling employees until it becomes more widespread. ■

BUYERS SATISFACTION SCORECARD

REMOTE CONTROL SOFTWARE:

Products score high with improved ease of use and speed

BY KEVIN BURDEN

USER PERFORMANCE SCORE

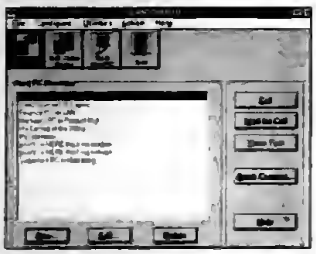
Different approaches yield three-way tie

Here is how the leading remote control software products scored in user ratings of their chief features. The categories are the six designated as most important by the users surveyed.

Eighty-nine percent of the users also said they were likely to buy the product again.

The chief weaknesses for all three products were in the same areas — encryption, automatic dial-back, virus detection and screen caching — all of which were among the least important factors to the users surveyed.

PCANYWHERE FOR WINDOWS 2.0



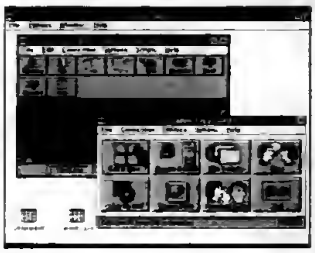
Symantec Corp., Cupertino, Calif. (800) 441-7234

What PCAnywhere does best:
"The product is just real easy to use. It has a very familiar look and feel."
— Harold High, technical administrator, Goodrich Aerospace Co., Akron, Ohio

Ease of operation	7.1
Speed	6.8
Technical support	7.0
Documentation	7.0
File transfer	6.9
Average rating	6.9

(Based on a 1-to-10 scale of performance where 10 is best. Response base: 50)

CARBON COPY FOR WINDOWS 2.5



Microcom, Inc., Norwood, Mass. (800) 822-8224

What Carbon Copy does best:
"It's especially easy to dial into bulletin boards like CompuServe."
— Joseph Curran, data processing manager, Buck Co., Quarryville, Pa.

Ease of operation	7.2
Speed	6.8
Technical support	6.5
Documentation	6.6
File transfer	7.3
Average rating	6.8

(Based on a 1-to-10 scale of performance where 10 is best. Response base: 50)

LAPLINK FOR WINDOWS

Traveling Software, Inc., Bothell, Wash. (800) 343-8080

What LapLink does best:
"Its file transfer over a parallel cable is unmatched."
— Norbert Callahan, IS manager, Leggat McCall Properties, Boston

Ease of operation	6.9
Speed	7.0
Technical support	6.4
Documentation	7.2
File transfer	7.2
Average rating	6.8

(Based on a 1-to-10 scale of performance where 10 is best. Response base: 41)

Not all remote access software packages are created equal. This Buyers' Satisfaction Scorecard survey of more than 100 remote control software users reveals that while the three market-leading packages focus on ease of use and speed, they each possess subtle differences.

- Symantec Corp.'s PCAnywhere for Windows: Its ability to be installed as a LAN application makes it one of the strongest remote control products for an enterprise installation.
- Microcom, Inc.'s Carbon Copy for Windows: Tight integration with Microcom's remote node software gives users flexibility to switch between session types, depending on the application accessed.
- Traveling Software, Inc.'s LapLink for Windows: LapLink has just gained remote control capabilities. Its strength is rooted in speedy file transfer.

PCAnywhere

With Version 2.0, PCAnywhere became much easier to use. The product now includes extended on-line help features such as The Norton Assistant, which interactively walks users through tasks a step at a time. Version 2.0 also sports an automatic scripting feature that records keystrokes for script building.

Configuration also became easier in Version 2.0. A new utility called Smart Set-up automatically queries and records the system's hardware configuration parameters, saving users time and preventing improper installation.

Installation has also improved in this version. Previously, PCAnywhere would replace drivers in the SYSTEMS.INI file, causing conflicts with Windows programs. The previous version "actually removed some essential pen drivers," says Randy Weick, network operations administrator at Bank West in St. Francis, Kan. The problem caused Weick to remove the old version from his Compaq Computer Corp. Concerto system.

Symantec also supports more protocols with Version 2.0.

Carbon Copy

One of Carbon Copy's strengths is that it does not require users to select remote control or remote node connections. Its tight integration with Microcom's remote node product, LANExpress Remote LAN Access System, provides users with the flexibility to switch between the two session types.

"There are going to be occasions where having both will be very useful, and this product does not force the user to make a choice," says Jay Batson, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

Sometimes a user may not know which choice to make. When that happens, Batson explains, a sentry pops up and prompts the user to switch sessions.

With Version 2.5, speed is of the essence: A new 32-bit communications driver enhances the performance of remote Windows communications drivers. And Carbon Copy now handles throughput speeds of 28.8K bit/sec. modems.

Like PCAnywhere, Carbon Copy has also added protocols to its list. It can now accommodate nine file transfer protocols, including the different variations of Kermit, Xmodem, Ymodem and Zmodem.

LapLink

Remote control is a new capability in LapLink; its bread and butter has long been file transfer. LapLink employs an easy-to-use, graphical drag-and-drop feature to transfer files between systems. It also provides a module called SmartXchange that lets users customize the directory synchronization on both the host and the remote.

"Large portions of buyers look to LapLink based on name-brand recognition and file synchronization, not remote control," says Karl Wong, an analyst at Dataquest, Inc. in San Jose, Calif.

The package also has some unique attributes to enhance its performance. To speed up screen refreshes, remote PCs save local copies of Windows tool bars, icons and bit-maps, improving overall graphics performance.

"The more I've used LapLink initially, the faster it got because it learns more and more about my office system," says Martin Burall, operations manager at Farmers Mechanics National Bank in Frederick, Md.

LapLink supplies both serial and parallel port cables, allowing remote users to run 28.8K bit/sec. modems. But what really speeds up LapLink is its SpeedSync technology. SpeedSync views the different files on both the host and the remote, then transfers only those files or file portions to the target PC.

LapLink also excels in its documentation, an important requirement for remote users. "LapLink has very intuitive documentation and dynamic on-line help that is very easy to use," says Randy Giusto, associate director at BIS Strategic Decisions in Norwell, Mass. ■

Burden is *Computerworld*'s senior researcher, Firing Line/Scorecard.

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LOTUS' NOTES 3.2:

Ties in remote sites, but users look for an easier setup

BY KEVIN BURDEN

While the world awaits Microsoft Corp.'s Windows 95, there are software alternatives for setting up your company's remote communications other than remote control and remote node products. One of the best-known options is Lotus Development Corp.'s Notes.

At Lotusphere last month, Lotus announced price cuts [CW, Jan. 30] that clearly indicate it is trying to move Notes into as many sites as possible before Microsoft unleashes its double threat of Windows 95 and the Exchange server. The cost of the client/server version of Notes was reduced from $330 to $275.

Lotus is also working on Notes 4.0. But with delivery still at least six months away, Version 3.2 is Lotus' leading remote communications offering.

In-depth interviews with five evaluators and a survey of 27 Notes users revealed that the product provides a strong application development environment and communications platform. But it also found Notes to be a complex package that requires a lot of information systems involvement and that it could use more support from Lotus.

The evaluators included a financial services firm, a scientific instrumentation company, two universities and a large bank.

Reliability

Many factors contribute to Notes' reliability — namely, the client/server hardware and the network. Evaluators explained that crashes that occurred were due to hardware problems, not Notes. One evaluator found a minor problem with the integrity of imported and exported files.

Application development

Notes' development tools are conducive to particular types of applications, such as information distribution, group discussion and workflow. Go outside the application sweet spot, and you're asking for trouble.

Bank: "Applications that hit the Notes paradigm can be knocked out in a day. Try to develop transaction processing programs, and you will have problems."

Scalability

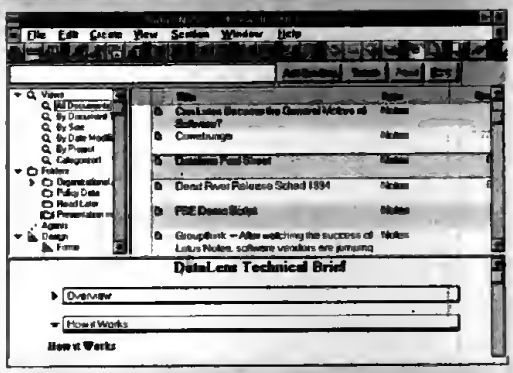
Notes appears to have few scalability problems. After all, it's the server, operating system and network that really dictate how large the system can grow. But users have had problems with the lack of instruction from Lotus regarding how many users can be supported on different platforms.

University 1: "I've received little to no guidance from Lotus on how to balance the number of users per server."

Remote access

The biggest problem with remote access is getting set up. If the particular driver your modem requires is not provided in Notes, it might be provided on Lotus' bulletin board. If not, Lotus has several generic drivers.

PREVIEW: NOTES 4.0



This screen shows a document database under the new Notes 4.0 user interface. The new version will add user tools, mobile support, development tools, server support and integrated mail.

University 2: "Generic drivers are always suspect. The worst that can happen is the modem will not even dial; the least is the session will abruptly hang up after a while."

Ease of installation

The evaluators said their server installations were uncomplicated and executed as expected. But remote installations were a different story.

University 1: "It can be difficult for users unfamiliar with server applications. Users need IDs and have to dial in to the server to complete the connection."

Third-party applications

The most compatible applications are developed with a conscious integration effort from the start.

Financial services firm: "Our success with Approach 3.0 has enticed us to move to [Lotus'] SmartSuite simply for the integration."

Two users said they expect to use Trinzic Corp.'s InfoPump to push Oracle Corp. data to Notes. But timeliness is a drawback to this approach, a Gartner Group, Inc. report said, because only non-real-time data gets moved. ■

Burden is *Computerworld*'s senior researcher, Firing Line/Scorecard.

Highly reliable, but application support limited

Lotus Notes 3.2	Performance rating	Importance to users	Evaluator comments
Reliability	7.3	9.2	Crashes experienced were caused by hardware failures rather than Notes.
Scalability	6.8	7.7	Users said they were not proactively guided by Lotus during the building of their Notes applications.
Remote access	6.6	7.6	Having the correct modem driver is key; Lotus' generic drivers are less reliable.
Application development	6.2	7.7	The tools are there but primarily to build workgroup applications.
Ease of installation	6.2	6.9	Server installation is easy, but the client installation is too involved for inexperienced users.
Third-party applications	5.6	6.8	Smooth integration for Notes-specific applications, but very difficult when linking to relational databases.
Average rating	6.5		

Ratings are based on a 1-to-10 scale where 10 is best performance or highest importance. Ratings represent the average ratings of 27 Notes users interviewed in the Buyers' Satisfaction Scorecard survey.

Lotus Development Corp.
Cambridge, Mass.
(617) 577-8500

Lotus responds

Scalability: Lotus is working with partners including Hewlett-Packard, IBM, Sun, The Santa Cruz Operation, Apple, Compaq and others to support customers' decisions for Notes platform selection and configuration. Additionally, we have made available information on tuning OS/2 server performance and server platform performance for capacity planning.

Third-party applications: Lotus provides several options for leveraging database management systems, including Lotus' VIP, Open Database Connectivity drivers and Notes SQL. Lotus' business partners, including Gupta and Trinzic, provide additional options.

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PRODUCT test DRIVE

CLOSE-UP 6.0:

Easy to install, awkward to use

BY HOWARD MILLMAN

Featuring a simplified installation but requiring a DOS-based command structure, Close-Up 6.0, one of the newest remote control software packages, has a split personality. New users will find it easy to load, but unless they have DOS application experience, they will have a hard time using it.

Installing and configuring Close-Up — a $199 DOS-based product with a Windows interface — is a no-brainer. Users slip the disk in the drive and answer questions. The product, sold by Norton-Lambert Corp. in Santa Barbara, Calif., analyzes the system and chooses a modem configuration from the more than 700 setups it contains. Close-Up also offers a no-name generic modem setup and a direct connect choice.

Once installed, Close-Up needs command-line arguments to fine-tune its behavior. Experienced DOS software users won't be intimidated by its many command-line options, but newcomers will.

The program's first-rate documentation helps users select the correct syntax, but what if the program launches from a menu? The thought of users freely modifying nested menus, Windows' Properties dialog box or Close-Up's PIF makes falling through an open manhole seem appealing.

Avoiding command line

Some command-line arguments are relatively exotic, but others offer worthwhile, even necessary tweaks such as a high-memory loader, high-speed initialization and virus checking, which are activated by launching a third-party antivirus application. Other options, such as access to Terminal, are essential. Terminal, a modest communications program, offers Xmodem and ASCII text transfers, automatic parity detection and a scrollable screen buffer.

One way to avoid command-line options would be to let users reconfigure features dynamically. For example, give them access to all program features, including communications speeds and ports. Even if two machines are hard-wired, why exclude users from looking at the phone book?

In our tests on Close-Up, we uncovered a couple of bugs that need correcting. In Chat mode, both users share the same dialog box. If both type at the same time, the text of one user intermingles with that of the other. Also, if you move the Chat box, all the text disappears. And the remote machine can lock the host's keyboard when in DOS mode; however, loading Windows on the host inexplicably reactivates its keyboard.

Minor glitches

Granted, these were small irritations, but there were others. For example, when the remote did not connect to the host, it often locked up. In Setup, when we chose Direct Connect, the program checked for a modem, although we'd opted against one. We got an ego-deflating error message advising us to "ask a qualified computer consultant" to resolve the problem.

Context-sensitive, on-line help would have accelerated resolution of some problems, but we did eventually resolve all of them with a combination of command-line options and tricks remembered from DOS days. The reward was a package that performed as expected.

On the plus side, we liked the ease with which we could change some features such as the hot keys. We also liked a pop-up menu that let us execute commands locally on the remote. Close-Up's Record and Playback feature let us save snapshots of individual screens or record entire sessions.

Close-Up's other strengths include its password and security features. Roam, which is activated by a command-line option, enables mobile users to change the dial-back number.

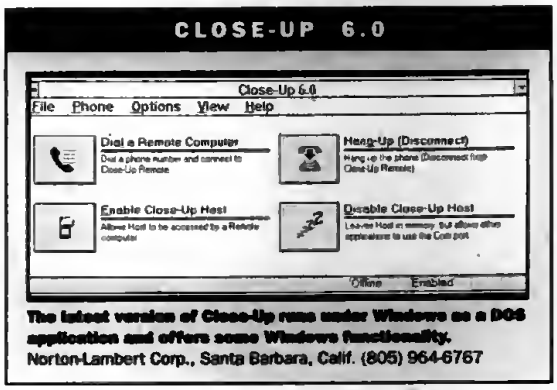
One feature we'd like to see is encryption support for file transfer. File transfer works similarly to Symantec Corp.'s Norton's Commander. The program displays a vertically split screen, with the host on one side and the remote on the other. F10 toggles between tree and file displays. While the program does not support drag and drop, the system it uses is simple and traditional, and it works.

And although Close-Up does not offer drive redirection, smaller users can simply type in the drive letter they want to access on the host.

Close-Up's Task Files, macro-like files written in a high-level scripting language, are easy to use and debug with the built-in run-time debugger. Through Task Files, we scheduled unattended operations and included a complete range of fail-safe controls. The addition of a keystroke record feature would further simplify building scripts.

We didn't have any problems controlling Windows on the host with the remote machine's mouse but experienced some discoloration in Windows' splash screens, which we attributed to Close-Up's 16-color limitation and 800- by 600-pixel maximum resolution. ■

Millman is a principal at Data Systems Services in Croton, N.Y.



The latest version of Close-Up runs under Windows as a DOS application and offers some Windows functionality.
Norton-Lambert Corp., Santa Barbara, Calif. (805) 964-6767

Users seek greater security

Letting outsiders into corporate networks can give even the calmest IS manager a wild case of the jitters, even if the outsiders are employees working remotely.

"It's a catch-22. You want users to access data more easily, but that brings up security issues," says Gary G. Pan, a consultant for the U.S. Department of Labor's Employment Standards Administration in Washington. "We want flexibility. We recognize that some security goes, so we put more of it on the host systems."

To address security issues, remote access vendors build a couple levels of security options into their servers. The simplest method is a password challenge. The next level is a callback method in which the server calls back after the user dials in and permits access only if the callback number is on its preapproved list.

More than 100 remote control software users surveyed in the Buyers' Satisfaction Scorecard gave password systems and automatic dial-back schemes low ratings in terms of satisfaction. They also placed them low in importance among the product features. One reason may be that users are employing alternative security methods.

For example, many users say they are considering a more secure method from Security Dynamics, Inc. in Cambridge, Mass., in which mobile users carry a "credit card" that generates a new password every 60 seconds. After a user logs in with his personal ID, a Security Dynamics server accepts the password from an LCD on the card. The number sequence on the card is synchronized with the server so the software knows what the number should be.

"We're a bank, and the first issue is security," says William Santille, a vice president of communications at Harris Bank Corp. in Chicago. "Dial-back is not an option for people on the road, so authentication cards make more sense."

Other leading remote access security vendors include Digital Pathways, Inc. in Mountain View, Calif., and LeeMah DataCom Security Corp. in Hayward, Calif.

— Lynda Radosevich

Computer Press Association Reader Awards Ballot

Send or Fax entries to Computer Press Awards, 2 Floyd Drive, Mount Arlington, NJ 07856. Fax entries to (201) 663-5140.
All nominated entries must have appeared in 1994. Nominations must be received by February 28th.

Favorite Publication

Publication:

Broadcast/Appearance Date:

Article or Series Name:

Author/Host:

Remember, you can vote for a television program, or on-line service, too.

Best Instructional or Educational Article or Series

Publication:

Broadcast/Appearance Date:

Article or Series Name:

Author/Host:

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Publication:

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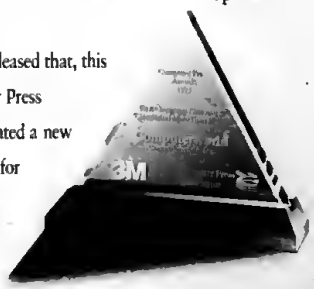
Nearly all editorial awards are decided by committees of experts who sit and review entries and use their best judgment to decide which publication or article is best. There is nothing wrong with this process — and it has certainly produced many awards for *Computerworld* — but, frankly, the opinions of our readers are more important to me than the opinions of experts. It is readers, after all, who are best able to judge the quality and usefulness of the material they read. And it is readers — not experts — for whom we write.

So I am very pleased that, this year, The Computer Press Association has created a new category of awards for their Tenth Annual Computer Press Awards: "The CPA Reader-Chosen Awards." These awards will be decided by the votes of publication readers. It is your chance to make your opinions count. I, for one, will be very interested in what you have to say.

To make your voting easy, we have provided a copy of the official ballot. You can fill it out, fax it in, or drop it in the mail.

However you do it, I encourage you to vote. The computer publication editors of America are waiting to hear your opinion!

Bill Laberis
Editor in Chief



Tenth Annual Computer Press Awards, 1995

The Computer Press Awards, co-sponsored by 3M Data Storage Products and the Computer Press Association (CPA), honor the top journalists who excel in their coverage of information technology. As the oldest and most coveted honor of its kind, the CPA provides a forum for technology journalists to be recognized by their peers.

COMPUTERWORLD

These are the stories we have submitted for review by the CPA. Please feel free to nominate these, or any other articles you've enjoyed during the year.

Instructional or Educational Articles or Series

- Guide to PC Support; *Kevin Burden, Stephan Clancy, Robert Johnson* (Dec. 5th)
- Guide to E-Mail; *Avery Jenkins, David Marshak* (Oct. 24th)
- Guide to 32-bit Operating Systems; *Jonathan Eunice, Mike Sullivan-Trainor, Garret Ray* (Apr. 11th)
- VIRUS; *Phillip Zakas* (July 11th)
- Software Product Review: Test Drive; *Jeff Angus, Al Giovetti* (Nov. 14th)
- Software Product Review: Test Drive; *Garret Ray* (Dec. 12th)

Features or Reviews

- High Tech Wagering: Jackpot or Jeopardy; *Joe Maglitta* (Feb. 7th)
- Gays at Home in High Tech; *Ellis Booker* (Sept. 26th)
- Demonstrating Value of Technology; *Alice LaPlante* (August 15th, Oct. 3rd, Oct. 31st)
- Is COBOL Dead? *Alan Pursell, John Cunningham* (April 25th)
- Decree: Deal or Dodge? *Stuart Johnston, Mitch Betts* (July 25th)
- Migration Costs Stoke User Anger; *Rosemary Cafasso* (May 16th)

The Virtual Internet Forum

WELCOME TO IN DEPTH'S FIRST VIRTUAL INTERNET EXPERTS' FORUM. FROM INTERNET MAILBOXES ACROSS THE COUNTRY, WE'VE BROUGHT TOGETHER INTERNET "DIGERATI" – INTERNET-SAVVY AUTHORS – TO TACKLE QUESTIONS ON THE MINDS OF BUSINESS USERS ABOUT SECURITY, NAVIGATION AND COMMON MISTAKES. WITHOUT FURTHER ADO, WE OFFER THEIR ELECTRONIC WORDS OF WISDOM.

WHAT'S THE BIGGEST SECURITY FAUX PAS A BUSINESS CAN MAKE ON THE INTERNET?

RELYING ON MULTIPLE-USE PASSWORDS. For years, the focus on passwords has been to pick a "good" one to resist dictionary (guessing) attacks. This never worked very well. There was usually a weak link somewhere. People created machine-generated passwords that invariably ended up being written on a Post-it note or blotter near the machine. But these sorts of problems are moot.

Last February, numerous regional network providers got hacked, and the hacked machines, which had access to the main flow of packets to the backbone, were running "packet sniffers." These record the host name, user name and password of terminal sessions within the packet flow. At the time, it was reported that the creeps had captured perhaps tens of thousands of passwords, both good and bad. This was not a big surprise to those of us in the business; Ethernet has always offered eavesdropping services.

By June, I had heard that perhaps more than a million passwords had been captured. I also heard that Milnet (military network) was having unusually bad hacking problems.

I think these two facts are related. If the creeps have a list of thousands of hosts they can enter, they certainly will look for juicy targets, and Milnet is the mother of juicy targets for most hackers.

The bottom line is this: If you have typed a password on the Internet in the past year or two, there is a reasonable chance that somebody has that password recorded some place.

Use onetime passwords.

— William R. Cheswick

HONESTLY, THE BIGGEST SECURITY MISTAKE is to misunderstand security threats. For example, there's a widely held belief that it's extremely dangerous to send a credit-card number over the 'net because a bad guy might steal it. Well, sure, there's some possibility of that, but is it as likely as a bad guy fishing charge slip carbons out of a dumpster? Hardly. That threat is overstated.

On the other hand, setting up a direct link between the Internet and a large corporate network is asking for trouble because the larger the network, the more likely some of the systems on the 'net will have security holes. I have a direct link from my network to the Internet, but my network has six hosts, only two of which can be logged into, so it's not hard to audit them for security. For larger networks, the only sane connection is via a firewall system that controls and audits all connections between inside and outside.

—John R. Levine

HAVING LOG-IN ACCOUNTS WITHOUT passwords or having shared accounts: Both are about the same as asking somebody to break in.

—John S. Quarterman

COMPANIES MAKE A MISTAKE by failing to change default settings, such as default passwords for root, administrative or field service accounts, when taking products out of the box. Also, they don't set up firewalls or end up trusting firewalls to the extent that they ignore the need for internal defenses such as trip-wire checks, access logs and careful set up of file and program execution permissions. And they don't educate and train users enough.

—Daniel P. Dern

1. **NOT EDUCATING USERS ABOUT ELEMENTARY PASSWORD SECURITY.**
2. **NOT EDUCATING USERS ABOUT ELEMENTARY PASSWORD SECURITY.**
3. **NOT EDUCATING USERS ABOUT ELEMENTARY PASSWORD SECURITY.**

— Howard Rheingold

SECURITY CAN BE COMPROMISED by putting out information prematurely or hastily. That's how personnel appraisals get posted on newsgroups, copyrighted software gets distributed via the file transfer protocol (FTP) and users get unreadable or inaccurate files.

Common sense and caution can prevent security problems. Slow down. Review everything before you send it. Don't leave anything on the hard disk of a networked machine that you wouldn't want 10,000 strangers to see. Don't send mail you wouldn't want posted on a bulletin board. Provide your users with opportunities to review items before they are posted publicly.

—Nancy R. John

WHAT IS YOUR BEST TIP FOR INTERNET BUSINESS USERS?

LEARN HOW TO USE a World-Wide Web browser such as WebSurfer, Netscape or Mosaic. A few hours spent looking around can yield insights into what your competitors, customers and suppliers are up to as well as ideas for new products and markets.

—John R. Levine

GET A HOME PAGE ON THE 'NET. Keep it current. The 'net offers a juicy demographic crowd, and the home page is cheap. Make sure the home page is advertised and announced appropriately.

Please note: I am not suggesting that you hook your payroll computer to the Internet. A home page is just a file on someone's computer, and people sell home page services cheaply.

— William R. Cheswick

Virtual Internet forum, *page 124*

The digerati

WILLIAM R. CHESWICK is co-author of *Firewalls and Internet Security: Repelling the Wily Hacker* (Addison-Wesley, 1994). Cheswick is a senior researcher at AT&T Bell Laboratories, where he designs and maintains the company's Internet gateway. He can be reached at ches@attbl.attmail.com.

MARY J. CRONIN is author of *Doing Business on the Internet: How the Electronic Highway Is Transforming American Business* (Van Nostrand Reinhold, 1994). She is a management professor in the Department of Operations and Strategic Management at Boston College. She can be reached at cronin@bcvms.bc.edu.

DANIEL P. DERN is an Internet analyst, writer, pundit and gadfly. He is author of *The Internet Guide for New Users* (McGraw-Hill, 1994) and is currently working on *The Internet Business Handbook* (Prentice Hall). He can be reached at ddern@world.std.com.

Current favorite Pentium joke: "Round off the usual suspects."

NANCY R. JOHN is co-author of *The Internet Troubleshooter: Help for the Logged-On and Lost* (American Library Association, 1994). She is the assistant university librarian, associate professor and manager of library systems at the University of Illinois at Chicago. She can be reached at nrj@uic.edu.

ED KROL is author of *The Whole Internet Users Guide* (O'Reilly & Associates, 1994). He can be reached at e-krol@uiuc.edu.

JOHN R. LEVINE is author of a dozen books, including *The Internet for Dummies, 2nd Edition* (IDG Books, 1994) and *Internet Secrets* (IDG Books, 1995). He can be reached at johnl@iecc.com.

TRACY LAQUEY PARKER is author of the first and second editions of *The Internet Companion: A Beginner's Guide to Global Networking* (Addison-Wesley, 1994). She is manager of Education Market Development at Cisco Systems, Inc. and can be reached at tparker@cisco.com.

HOWARD RHEINGOLD is author of *The Virtual Community: Homesteading on the Electronic Frontier* (HarperPerennial, 1994). He is editor of *The Whole Earth Review* and can be reached at hlr@well.com.

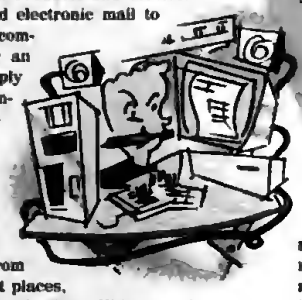
JOHN S. QUARTERMAN is co-author of *The E-Mail Companion: Communicating Effectively via the Internet and Other Global Networks* (Addison-Wesley, 1994) and author of *The Matrix: Computer Networks and Conferencing Systems Worldwide* (Digital Press, 1990). He is also a founding partner of Texas Internet Consulting in Austin and can be reached at jsq@tic.com.

MY BEST TIP for Internet users is encourage people who work for you to have fun on the 'net. You have to appreciate the medium to be able to use it to your advantage. Bill Gates had so much fun playing around with computers he started Microsoft Corp.

— Howard Rheingold

DEVELOP A WEB SERVER that provides information about your company, services and products. Resources available to assist you run the gamut from individuals and companies doing Web development and consulting to groups providing virtual office park space for Web servers.

One place to consult for more information is Commercenet's Directory of Internet Consultants. You can check out the Web server directly (http://www.commerce.net). Select the Commercenet Directories, then Products and Services entry. Or send electronic mail to consultants@commerce.net for an automated reply of Internet consultants who have listed themselves in this directory.



People will be entering the Web from many different places, so it helps if your business Web server is referenced in relevant servers. You may encounter organizations that will want you to pay for advertising your server on theirs. This is becoming more common.

Finding other servers that can promote yours takes active participation on your part to search the Web. Use the various search engines available. Some of these include the following:

- Lycos Home Page (http://lycos.cs.cmu.edu)
- WebCrawler Project (http://webcrawler.cs.washington.edu/WebCrawler/WebQuery.html)
- World-Wide Web Worm (http://www.cs.colorado.edu/home/mcbryan/WWW.html)
- Netscape Corp. provides a catalog of Internet Search Engines (http://home.mcom.com/home/internet-search.html)

Or check out the subject-oriented directories and indexes such as Yahoo (http://akebono.stanford.edu/yahoo/).

Keep in mind that a Web presence will not guarantee you increased market share, but it can help supplement your sales and marketing efforts.

— Tracy LaQuey Parker

THE INTERNET IS CHANGING SO FAST that keeping good notes and a record of where you've been, what you've seen and how you got there are essential.

In spite of the many cool and creative search and retrieval applications being developed and the search histories that some Internet tools provide (e.g., hotlists and bookmark files), retracing your footsteps on the 'net is still very difficult. Paths and resources change; servers come and go.

At the university where I work, we've made some movies of users connecting to early Internet resources. These movies may be the only record of some servers that have gone out of business. There is nothing more frustrating than not remembering what something is called, where it is or how to get there — unless of course, you know all that, but you can't connect because it's too busy, down or closed up.

— Nancy R. John

IT'S HERE, IT'S NOW, BUT BE CAREFUL. If you are connecting a network to the Internet, hire a company that knows what it is doing and be prepared to do a security audit on every machine you can reach from the Internet. A good, safe way to start is to pay a service bureau to be your agent on the 'net. You rent space on its machine for your catalog, so if hackers attack a machine, they will be attacking the service bureau's, not yours.

— Ed Krol

WHAT'S THE MOST HORRIBLE INTERNET MISTAKE A BUSINESS CAN MAKE?

I CAN THINK OF SEVERAL. One is not understanding the 'net culture and netiquette. The Internet is still heavily influenced by its founding members — the research and academic communities — who believe in the free exchange of scholarly information. Many people just plain resent having their space invaded by vendors hyping their wares on E-mail lists and newsgroups. So they fight back because they now have the tools to do so.

For example, some people will "spam" your E-mail box — sending you thousands of mail messages or very large messages — or tie up your 800 number if you send a blatant advertisement to a list or newsgroup. Also keep in mind that many people foot the bill (via on-line time, disk space and long-distance charges) to receive E-mail messages and news, and they consider it rude for companies to force them to assume the charges that direct-mail messages may incur. So don't assume that traditional business practices apply on the Internet.

Another big mistake is to assume there will be no commercial use of the Internet. We are continuously finding new ways to make money through the telephone and the television, and we will continue to find ways to make money through the Internet.

WHAT DO YOU CONSIDER TO BE ONE OF THE MOST USEFUL NEWSGROUPS FOR BUSINESS ORGANIZATIONS?

I LIKE THE INTERNET MARKETING discussion mailing list. People use this to discuss marketing and business ideas, what works and what doesn't.

To subscribe, send E-mail to listproc@einet.net with the command INFO INET-MARKETING in the body of the message.

According to the INET-MARKETING moderator, Glenn Fleishman, this list was established to discuss appropriate marketing of services, ideas and items to and on the Internet. At this writing, more than 2,000 people and sites involved in all aspects of marketing, sales, programming, journalism and other fields are actively participating in this forum.

— Tracy LaQuey Parker

THE MOST USEFUL NEWSGROUP is one that directly addresses your interests, so there's no single answer. A good place to start is the group news.lists, where you'll find articles listing all of the widely available newsgroups. You'll also find lists of on-line mailing lists, which are another resource, often better than newsgroups, for specific special interests.

— John R. Levine

UNFORTUNATELY, EVEN THE BEST, most intelligent and relevant newsgroups are full of noise. While free access to publish easily is an interesting development, most people don't have much of interest to say. Intelligent and interesting people are posting on the 'net, but it takes a lot of culling to find them.

But it is useful to monitor public sentiment regarding one's business. So the American Widget Co. would be foolish not to monitor relevant newsgroups like biz.widgets, soc.widget-users and even alt.widgets. Security folk can stay current on the latest sendmail bug on alt.security. But if you are going to waste time on newsgroups, rec.humor.funny is probably the biggest bang for the briefest buck.

— William R. Cheswick

FIRST, IGNORE MOST of the unmoderated biz.* and alt.business.* newsgroups; they've Greshemized into near-uselessness.

I'd call it a tie between comp.internet.net-happenings (Gleason Sackman's moderated announcement list), alt.internet.services (which is getting increasingly high noise-to-signal, sadly), the news.admin.* groups, and alt.current-events.net-abuse (which may be replaced/supplemented by a moderated summary). Scan these, and you'll have a pretty good sense of what's happening on the 'net.

For general technology education, you should also follow the Risks forum via the Usenet newsgroup comp.risks, but take this with a grain of salt. At least one person in your organization should follow the com-priv mailing list, especially if you can do so as a newsgroup and are prepared to skip 75% of the messages. (If com-priv is not available as a local newsgroup, subscribe by sending a message to com-priv-request@psi.com. Allow two weeks for the volunteer list administrator to add you.)

You can join several good mailing lists about Internet-related marketing. They include the following:

- HTMARCOM — High-tech PR folks talking amongst themselves.
- INET-MARKETING — Internet marketing issues and discussion.

— Daniel P. Dern

THERE ARE THREE USENET GROUPS I try to read regularly, comp.infosystems.gopher and comp.infosystems.www, to keep up with the technical side of Internet Gopher and the Web, and comp.internet.net-happenings, to keep up with the content of the Internet. *— Nancy R. John*

PROBABLY STILL THE MOST USEFUL newsgroups are the computer-related groups. If you have questions about what machine to buy, what kind of disk to buy, or about this or that Novell thingee, these groups are good places to ask for and receive help. If you work for a computer vendor, they also offer opportunities to glean some consumer information by looking at discussions about products. You can engineer your products to avoid having them do what everyone is complaining that your competitors' products do. Or you can do damage control on the complaints about your own company's product. *— Ed Krol*

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23. Dir./Mgr. Sys. Development, Sys. Architecture
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CORPORATE MANAGEMENT
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13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Management
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
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19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech. Planning, Admin. Services
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
80. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Manager
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Management
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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We may not fully understand the commercial implications of the Internet for another 10 years, so things that don't work today may well work tomorrow after people are more used to doing business on-line.

— Tracy LaQuey Parker

NO QUESTION, THE WORST MISTAKE is spamming — sending out electronic junk mail. Incoming E-mail takes up space, takes time to throw away, and on some services, costs money to receive. So even though it's as easy to send a message to 10,000 people as it is to send to one, the main result you'll achieve is to make 10,000 enemies who will think badly of you and your company.

Contrary to the myth, it is possible to advertise effectively on the Internet, and companies do so now. But you have to offer something to make customers come to you, not try to force your message on them. For example, Wordsworth Books in Cambridge, Mass., set up a low-cost link between the Internet and its internal PC-based network that allows Internet users to browse the store's catalog, check availability and prices and send in inquiries and orders. The store now receives a steady stream of orders from all over the world (200 to 300 a month) that it wouldn't have gotten from its existing walk-in or telephone channels.

— John R. Levine

THE MOST HORRIBLE MISTAKE a business can make would be not connecting to the Internet at all.

— John S. Quarterman

THERE ARE LOTS OF WAYS companies can look bad on the Internet. Here are just a few:

- Posting incorrect or outdated information.
- Employees sounding off inappropriately.
- Employees inadvertently revealing internal data to thousands of list readers.
- Failing to answer legitimate customer concerns that are circulating on multiple groups.
- Broadcasting offensive ad material.

Put together a policy and a training program to ensure that every employee who posts to the Internet or interacts on-line with customers represents your company as effectively as possible.

— Mary J. Cronin

THE MOST HORRIBLE MISTAKE is to connect to the 'net without thinking about the security implications. The Internet offers a unique opportunity to embarrass your company in front of millions of people in a matter of seconds.

Fortunately, this appears to be fairly rare: Managers are well aware that the Internet is a bad neighborhood.

There are two mistakes that come to mind: Connecting networks that have no business risking the connection as well as connecting commercial workstations without vetting their network services.

I have heard of organizations that want an Internet connection because their employees want access. Fair enough. But the employees also have access to hosts containing valuable data such as secrets, personnel records and proprietary information. Management is concerned about exposing these hosts and wants to know how to protect these valuable machines.

First, don't connect your sensitive machines unless there is an important business case for doing so. Have the employees walk over to a "dirty," disposable machine to wander the information highway.

Second, commercial workstations are factory-configured for convenience and ease of use — not security. When you take them out of the box, they are *not* ready for exposure to the cruel world. They need professional attention: All unnecessary services should be turned off, and the remaining services must be evaluated for risk compared with the value of the data on the host.

— William R. Cheswick

UNDERVALUING THE IMPORTANCE of the content put out on the network and overvaluing its presentation is a common mistake. It's better to have clear, clean and accurate black-and-white typescript than lots of colorful graphics with no information. Businesses should think through the information *before* they think through its appearance.

Prevention: Think about the information you have and how your users want to use it. Make it easy for them. Enhance the access they currently have. Think about the organization of the information from the user viewpoint — not the provider viewpoint. Use clear descriptive titles for menus and documents. Help users to select the correct information, and don't promise more than you can deliver.

— Nancy R. John

> WHERE SHOULD A BUSINESS START IN TERMS OF USING THE INTERNET?

FIRST, GET YOUR DOMAIN NAME(S) registered and have an Internet Presence Provider help you mount a Web page, Gopher menu and mail server with basic information about your company.

For a current list of Internet Presence Providers who can run Web, Gopher, FTP and mailbot servers (i.e., a provider that can mount your content), Web over to http://www.directory.com.

Second, start putting together a plan that identifies specific goal and benefit-related Internet uses and activities.

Third, begin planning how employees will become Internet users. Don't plug the Internet in like a giant data fire hose with no guidelines, milestones or specific goals. And don't forget to train them.

— Daniel P. Dern

THE FIRST AND MOST IMPORTANT STEP is to figure out what information you want to make available and how to organize it. So, don't forget about the librarians in your business. Chances are they already have a good idea about what your competitors are up to and how to improve the organization and presentation of your information to users of your products or services. The process of putting information on the 'net probably accounts for less than 10% of the effort needed to figure out what information should be included, how to prepare it, organize it and keep it current. This is what librarians are trained to do.

— Nancy R. John ■

Bonus questions

> HOW BIG IS THE INTERNET?

For the core Internet, Texas Internet Consulting estimates there were 7.8 million users of 2.5 million computers that can provide interactive services such as Telnet (remote log-in), FTP (file transfer) or the Web (hypertext) as of October 1994.

For the consumer Internet, we estimate 13.5 million users of 3.5 million computers that can use the interactive services supplied by the core Internet – for example, people who can use Mosaic or Lynx to browse the World-Wide Web – as of October 1994.

— John S. Quarterman

> HOW CLOSE IS THE 'NET TO DOING REAL LIVE RETAIL SALES?

We are not quite there but about six months away. Currently, there are about three competing technologies for doing secure monetary transactions across the 'net. The 'net doesn't get really useful for retail sales until there is one standard for such transactions.

— Ed Krol

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	Objects in Business	Technology of Objects	Distributed Computing With Objects	Software Developers
Sunday, March 19	**TUTORIAL PROGRAM**			
9:00 a.m. 5:00 p.m.		T1 Introduction to Object-Oriented Technology	T2 Understanding Distributed Object Computing	T3 Design Patterns: Elements of Reusable Object-Oriented Software
9:00 a.m. 12:30 p.m.	T4 An Executive Overview to Object Technology	T5 OLE 2.0 Primer		
1:30 p.m. 5:00 p.m.	T6 Objects in Business	T7 OpenDoc Primer		
Monday, March 20	**TUTORIAL PROGRAM**			
9:00 a.m. 5:00 p.m.	T8 Object Models: Strategies, Patterns & Applications T9 Object-Oriented Business Engineering	T10 Reuse: Taking the Theory Into Practice	T11 Introduction to Client/Server Programming Using CORBA	T12 Introduction to Smalltalk
9:00 a.m. 6:30 p.m.	Executive Forum - Software as a Corporate Asset			
9:00 a.m. 12:30 p.m.		T13 Evaluating Object Database Management Systems for Production Applications		
1:30 p.m. 5:00 p.m.			T14 Distributed Computing With Legacy Mainframes	T15 Advanced Object Modeling and Design for C++
Tuesday, March 21	**CONFERENCE PROGRAM**			
7:30 a.m. 8:15 a.m.	Introduction to Object Technology*			
8:30 a.m. 10:00 a.m.	• Introduction to Business Objects • Strategic Issues in Transition Management	• Component Based Development • A Developers Overview of Object Technology Products & Services	• Getting Ready for Distributed Computing With Objects: The Next Paradigm Shift • Managing Distributed Object Development Projects • Distributed C++ Applications & Services	• Object-Oriented Languages Compared • Setting up a Smalltalk Shop
10:15 a.m. 11:30 a.m.	Keynote - Objects: Not Just for Programmers Anymore*			
11:00 a.m. 6:00 p.m.	EXHIBITS			
12:45 p.m. 1:30 p.m.	Industries in Action - Health Care*			
2:00 p.m. 3:30 p.m.	• Object Technology & BPR: Joining Forces • A Manager's Intro to Object Technology: Products & Services • Building The Business Case for Object Technology	• Managing Object-Oriented Projects: Scaling Up From Small to Large • Reuse & Extensibility	• The Future of OLE? • Success Stories in Distributed Object Computing	• Comparison of C++ & Smalltalk for Use with Object Databases • Motif Widgets, Object Applications & Design Development
Wednesday, March 22	**CONFERENCE PROGRAM**			
7:30 a.m. 8:15 a.m.	OMG: Building the Object Technology Infrastructure*			
8:30 a.m. 10:00 a.m.	• Planning for Reuse • Thinking in Objects	• Object Metrics: Current Practices • Implementing Persistent Objects • Object-Oriented Software Engineering	• Bridging Client/Server & Object-Oriented Computing • Choosing a CORBA Implementation	• Testing OO Systems & The Classes That Compose Them • Designing Control Flow Mechanisms for Object Programs
10:15 a.m. 11:30 a.m.	Keynote - Business Engineering with Object Technology*			
11:00 a.m. 6:00 p.m.	EXHIBITS			
12:45 p.m. 1:30 p.m.	Industries in Action - Financial Services*			
2:00 p.m. 3:30 p.m.	• The Object Technology Omnes Team • Survey of Object Technology Mainstream Business Applications	• Managing Quality for Object-Oriented Software • Comparing OOA&D Methods • Patterns	• Planning for Large Scale DOC Environments • Using CORBA to Integrate Legacy Systems	• Case Studies: Detecting Software Development Failures & Recovering • Automating Associations in C++
Thursday, March 23	**CONFERENCE PROGRAM**			
8:00 a.m. 8:45 a.m.	CORBA & COSS Up Close*			
9:00 a.m. 10:30 a.m.	Keynote - Theory is Great, But Does it Get the Job Done?*			
10:00 a.m. 2:00 p.m.	EXHIBITS			
12:45 p.m. 1:30 p.m.	Industries in Action - Telecom*			
2:00 p.m. 3:30 p.m.	• Business Object Management (BOM) • Object Technology & the Mainframe	• Building & Working with Reusable Software • Designing Reuseable Objects	• Case Study: Xerox's Migration to Distributed Object Technology • A Comparison: SOM and COM • Distributed Computing with Component Ware	• Using CORBA Facilities for Wrapping Applications • From OOA to C++: The Missing Link
3:45 p.m. 5:15 p.m.	• Applying the Object-Oriented Software Development Life Cycle • User Experiences with Object-Oriented Project Management	• Using ODBMSs in Production Applications • A Case Study of Large Scale Object Technology Development: Managing Complexity • Business Process Reengineering with Object Technology	• User Experiences in Distributed Computing • Issue Management of Complex Distributed Computing Components	• Incorporating CORBA Into C++ Applications • Patterns & Frameworks: Elements of Reusable OO Software

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Keynote Panelists: **Grady Booch,** Chief Scientist, Rational Software Corp.; **Ivar Jacobson, Ph.D.,** Vice President, Technology, Objectory AB.; **Stephen J. Mellor,** Vice President and Founder, Project Technology, Inc.

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18. Engineer (other than software)
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20. Information Systems Manager
21. Manager, Systems Architecture
22. Manager, Systems Development
23. Marketing/Sales
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25. MIS/DP Manager
26. Programming Supervisor
27. Software Development Manager
28. Technology Planning Manager
29. Project Manager
30. Technical Manager
31. Software Developer
32. Development Manager
33. Researcher
34. Programmer
35. Other

D. Number of Employees in Your Company:
36. Under 100
37. 100-499
38. 500-999
39. 1000- 4999
40. Over 5000

E. Which Functions Do You Perform in Regard to Object Technology?
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45. Develop/Use
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47. Other

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50. Eiffel
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Computer Careers

WORKING

By Candee Wilde

Job opportunities are opening up overseas, but be prepared for some relocation bumps.

What's it like to work in information systems outside of the U.S.? Michael Gentle, project manager for sales and marketing IS at SmithKline Beecham Pharmaceuticals just outside Paris, has worked in several countries. Gentle, 37, is a French citizen who was born in South Africa and moved to France in 1980. Here's his take on working abroad:

Michael Gentle: Accepting cultural differences is important

CW: From an IS perspective, what's different about working abroad?

GENTLE: There aren't really any differences. Computers are computers. The main differences are on the cultural side — integrating into a new culture and new environment and dealing with people.

CW: How would you characterize the differences between working in North America and working in Europe?

GENTLE: The differences are mainly in the approaches to work. From a Canadian/North American point of view, people are more structured. Procedures, rules and regulations are pretty important. Also, North Americans are more action driven. There is a bottom line "just do it" approach.

From a French perspective, things are different. They are less focused on procedures, rules and schedules. People are not so hung up on time. [Because] time is more fluid and interruptions are acceptable, meetings in France generally don't have agendas.

CW: What are the differences in attitudes about schedules and time?

GENTLE: Being on time in France means arriving within five to 15 minutes of the appointed hour. Furthermore, in France, a host would not end a meeting with a visitor if there were still important things to discuss, even if it meant being late for the next meeting.

I remember a visitor from Philadelphia who was treated firsthand to French business rules. Not only was his French host 15 minutes "late," he was constantly interrupted during their daylong meeting, either by people walking into the office or by phone calls. At no time did the host ask his secretary to hold all calls or request no interruptions. I was present for part of the meeting and could sense the visitor's discomfort at each interruption. But what the visitor was witnessing was "French time."

CW: What advice would you offer overseas workers as they get started?

GENTLE: Once you get into the foreign country, make friends with the locals. Avoid joining clubs of fellow compatriots living abroad, however tempting. Go out of your way to put your U.S. identity in second place.

Working abroad, *page 131*

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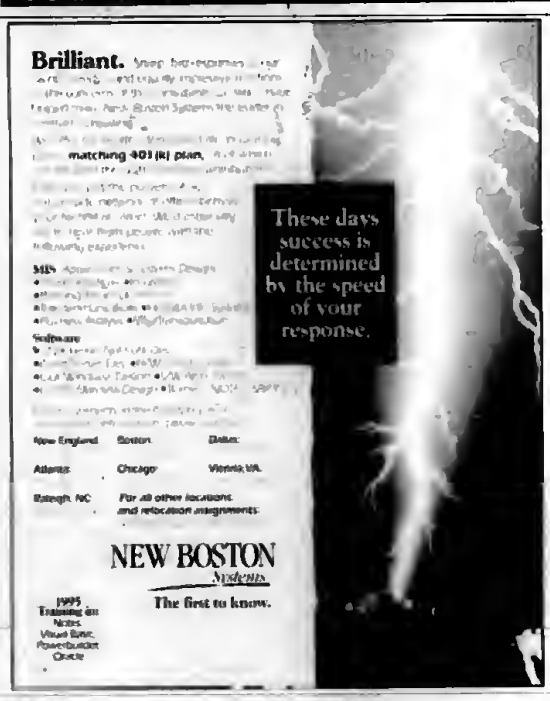

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Working abroad

CONTINUED FROM PAGE 129

When I worked at Apple in Paris, there were two different populations: those who understood that to be successful they had to integrate with the locals and those who stuck together as Americans. They would leave, six months or a year later, without gaining much.

Also, remember to be patient. There are no quick wins when it comes to working abroad.

CW: For the best results, how long should a foreign position last?

GENTLE: Two years is ideal; 18 months is minimum. Anything less and you're just passing through. Anyone who tries to work abroad should resist the temptation to come home after a few months.

Basically, there are three phases everyone goes through. During the first three months, everything is great. It's a new country, new food. You're still a tourist, but integration hasn't really started.

In Phase 2, from three to six months, you suddenly discover old, familiar ways don't work, and you have to relearn life's basics: language, sending and interpreting signals and so on. The tempting solution is to pack it in and go home.

But when you get through Phase 2, you suddenly wake up and realize the natives aren't that bad, they're friendly. You begin to feel at home. In Phase 3, you're on your way to integrating into society.

CW: How much of a barrier does language present?

GENTLE: If you want to be an executive or manager, you have to learn the language; [otherwise] you will be relegated to a technical role. The key exceptions are American companies with headquarters in Europe, where the official language is English. Apple is one example.

Because of the language factor, I suggest U.S. candidates start off in the UK. On the continent, one of the easiest countries language-wise is Holland — their command of English is very good.

After the Dutch, the best English speakers in Europe generally are the Scandinavians and the Belgians. The worst are the French, the Italians and the Spanish. In these countries, your professional and especially social integration is inextricably linked to your command of the language.

CW: What are the pros and cons of working abroad?

GENTLE: The rewards are great, from a personal and professional perspective. International exposure is a surefire winner on a resume.

A drawback is you run the risk of interrupting your current career path. There is the risk of not picking up where you left off when you go home. But, no pain, no gain.

CW: What's an important ingredient to success in a foreign country?

GENTLE: How well you can integrate into the culture. You must expect to change things you have taken for granted and question your most fundamental beliefs.

You come to the conclusion that everything is relative, from which side of the road you drive on to what constitutes the size of a sandwich [North American sandwiches are bigger] or what lunch is. For example, we don't have brown-bag lunches. We eat a full meal at the company restaurant, and it isn't a half-hour quick thing. It can easily take an hour.

To be successful in a foreign country, you must accept that things are different; it's not a question of better or worse. There shouldn't be any judgment in it at all. ■

Wilde is a freelance writer in Easton, Conn.

HOW NOT TO FEEL LIKE AN 'UGLY AMERICAN'

The following tips will help international IS transferees make it in a new country:

Language: Language skills will make everything simpler in a foreign country. Begin studying as soon as possible.

Housing: Finding a place to live can be a nightmare in cities such as Zurich or Tokyo. You could be required to pay as much as six months' rent up front — that is, if you can find a place at all. Your employer should help you locate a home.

Taxes: People who work abroad as American citizens must file federal income tax returns in the U.S. Some states also require international workers to file returns. American workers have to file tax returns in most foreign countries as well.

Spouses: Without sponsorship, spouses are frequently able to obtain only residence permits to live abroad, not work permits. One way to overcome this obstacle is through volunteer work. Spouses can offer their services to many international organizations that are desperate for volunteers.

Source: Tony Rodriguez, executive account manager, International Computer Professional Association

MORE READS

Coming soon to a new edition of a big publication nearby should. Summarize the discussion, Michael Wilde, a project manager at Continental Insurance Pharmaceuticals, recommends the following books:

Understanding Cultural Differences: Germans, French and Americans by Edward and Mildred Hall

Riding the Waves of Culture: Understanding Cultural Diversity in Business by Fons Trompenaars

E-mail resumes (ASCII format, no special requirements) to Tony Rodriguez at the International Computer Professional Association (cpa@hotnet.net or fax to (415) 208-9376)

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Submit resumes to: Tina Costa of Mason Concepts, Inc.
6380 Wilshire Blvd., Suite 1000
Los Angeles, Ca 90048
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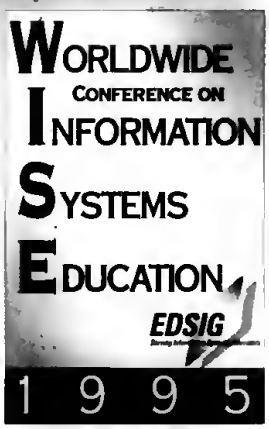

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PROGRAMMER ANALYST (2 openings) (Ref: 17995) to consult with user, perform requirement analysis & definition, logical data modeling, entity-relationship diagramming, process modeling, database design, programming, testing, & installing systems for various industrial engineering & business applications. Also conduct software training sessions for users & consultants on various software packages covering database theory & programming; design & develop database systems in a Novell Netware/Client Server Environment & Window 3.1 with Foxpro 2.5, DBase III Plus, C, XDB, Lotus Notes Version 3.0C, Notes API, VB link, XCOM, Notes VIP & Lotus Forms including notes Server Administration; Reqs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Engineer/Programmer or Consultant. Will accept 3 yrs. college ed plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed & exp. Must have some related exp. in each of the following: design, development, testing & maintenance of database management system using DBase III plus, Lotus, C. $34,200/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (2 openings) (Ref: 16695) Lead analyst for DB2 data base analysis, design & development for commercial applications. Meeting with users to gather exact requirements for online CICS developments; using VS-COBOL, JCL, ROSCOE editor, & IBM-Mainframe Operating System; Reqs. Bach in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv & 2 yrs. exp in job offered or 2 yrs. related exp as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, EDP Trainee or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp in job offered or related occup in lieu of req'd ed & exp. Must have some related exp in each of the following: System development & data processing on IBM mainframe on COBOL & using ROSCOE & JCL. $38,380/yr 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (2 openings) (Ref: 25686) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients needs, analyze, design, code, develop & implement computer software for clients EDP systems, analyze, develop & implement computer S/W for client system including Material Management System, Financial Accounting System; use IBM 3090-MVS/XA/ESA, TSO, IDMS DB/DC, ADS/A, ADS/O, OLM, IDD, COBOL/COBOL-II, JCL, IBM AS/400 COBOL 400; IBM PC, C. Reqs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Senior Programmer or Consultant. Will accept 3 yrs. college ed plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed & exp. Must have some related exp. using each of the following: IBM 3090, MVS/XA, TSO, ADS/O, OLM, IDD, COBOL, JCL & ADS/A. $43,500/yr 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave., Rm 815, Detroit, MI 48202 & include Ref # Employer Paid Ad.

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- Solid understanding of OSF/Distributed Computing (DCE) services and components with some exposure to object-oriented design/analysis methods, tools and standards

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- Working knowledge of Novell and UNIX LAN design, development and operations including troubleshooting experience with Ethernet, FDDI and Token Ring
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- Knowledge of protocol suites, bridging and routing technology
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Candidates must possess 2-3 years' LAN/WAN experience and some of the following:

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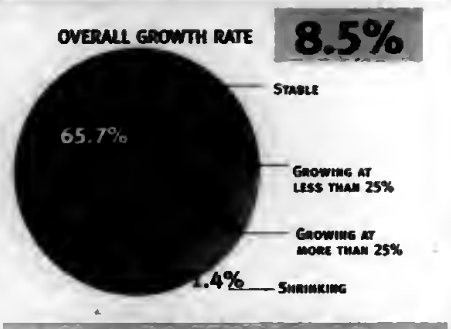

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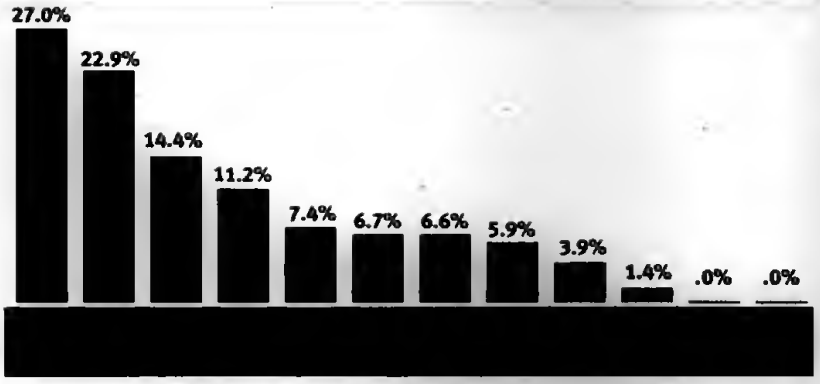

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Question of the month

▶ What should you keep in mind when buying client/server development tools such as Microsoft Corp.'s Visual Basic or Powersoft Corp.'s PowerBuilder?

We want your advice on this month's question. Please send responses to jnaze@cw.com or fax Jodie Naze at (508) 875-8931.

Fax software grows older, wiser

By Alan R. Earls

That David Eddy's first modem and fax software combination actually worked was a pleasant surprise, but he soon discovered the software's dark side. Sure, he could send faxes to beat the band, but "it was a pain in the neck" for incoming faxes. "To receive, I had to be here at my office with the machine turned on," says the principal of Software Sales Group in Newton, Mass.

Despite the inconvenience, Eddy persevered. He upgraded to a new modem and software from Global Village Communications, Inc., but because of incompatibility problems, the software no longer permitted autodialing. Worse still, its demand for memory sometimes wreaked havoc with the system's operations.

That was two years ago. This is now.

Fax software has had its share of problems: excessive memory and disk requirements, a tendency to tie systems up, incompatibility with existing fax machines and an inability to manipulate incoming faxes as text. Some of these glitches still occur no matter what package you pick, but things have clearly changed, users and analysts say.

"Today's fax modem software is a reliable way to send faxes," says Craig Gindici, an analyst at Dataquest, Inc. in San Jose, Calif. For example, while many products never used to work in the background, today most credible packages do.

Market revenue figures support this growing maturity. Since 1993, sales have doubled annually in the U.S. computer-based fax software market to some $2 billion, according to BIS Strategic Decisions in Norwell, Mass.

Despite some tough years and nagging memory requirements, users are starting to swear by their fax software rather than at it.

Two market leaders have emerged. "We see Delrina [Technology, Inc.] with about 71% of the market and Sofnet, Inc. with around 20%," Giudici says. Sofnet was recently acquired by Global Village.

As for Microsoft Corp.'s Windows 95, analysts predict it will briefly impact the fax software market when it's released because "it will incorporate good, basic fax modem functionality," Gindici says. But once buyers see its limitations, "they will seek out more full-featured products," he adds.

Bundling is the norm

Fax software is still sold separately, but manufacturers, OEMs and distributors bundling software with modems is the rule rather than the exception. Buyers must beware, however. "Some software vendors bundle [light] versions of their products with the expectation that it will get them exposure and users will want to upgrade to a full-featured version later," Giudici says.

Dineen Shearer says her recent experience with bundling was positive. Shearer got Tualatin, Ore.-based Prometheus Products, Inc.'s MaxFax software bundled with her Compaq Computer Corp. Presario. "I've used plenty of others," says the Warwick, R.I., business owner, "but this product was the most capable. It easily handles voice messages as well as faxes."

Despite vendor strides, some problems still exist. Most packages are reliable, but usability is an issue. "Many times the user interface is not as intuitive as it could be," says Jndy Pirani, an analyst at BIS Strategic Decisions. For example, some products have an excess of icons, making operations confusing, Giudici says. At the other extreme, some packages provide little or no visual feedback and make it almost impossible to know when a fax has been sent.

Also, incoming faxes are still treated as images, and if you want to edit the images' content, you need optical character recognition (OCR) software. While many vendors offer OCR capabilities, "it isn't necessarily at an acceptable level of functionality," Pirani warns. Few of the basic packages even offer it.

Last but not least, users still need a good-size hard drive and plenty of memory to accommodate an abundance of image files. Eventually, they'll want fax modems to handle voice messages as well.

Yet despite these ongoing issues, fax software has matured significantly. If you're not wed to your old fax machine and you generate most or all of your documents electronically, latch on to one of the better-known fax products.

"As Microsoft adds this capability, it will be harder for fax software vendors to stay competitive," Pirani says. "The market will probably go through consolidation, but it is better to stay with established names," she says. ■

Earls is a freelance writer in Franklin, Mass.

Look before you leap

- Is your hard drive adequate? Does your system have enough memory? Add OCR software to turn captured images into editable text and you need more memory (plan on 8M bytes).
- Do the features fit your needs? Those available include multiple phone books and the ability to mark up copies and handle voice messages.
- Are you comfortable with the user interface?

At-a-glance

then	now	future
▶ Hogged memory	▶ Hogs memory	▶ Wide use of OCR may make better use of memory
▶ Held machine hostage	▶ Many applications work in the background	▶ The ability to work in the background will be standard
▶ Image only	▶ Image, OCR and voice capabilities available	▶ Image, OCR and voice capabilities become the norm and quality of all improves

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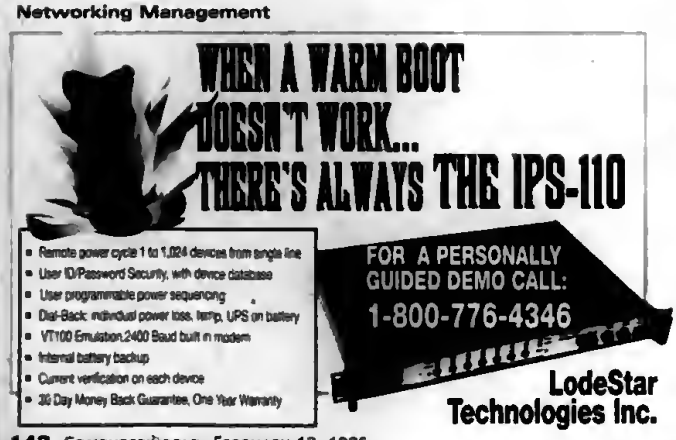

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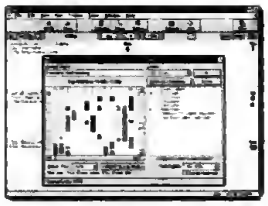

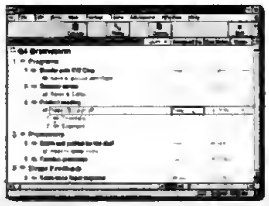

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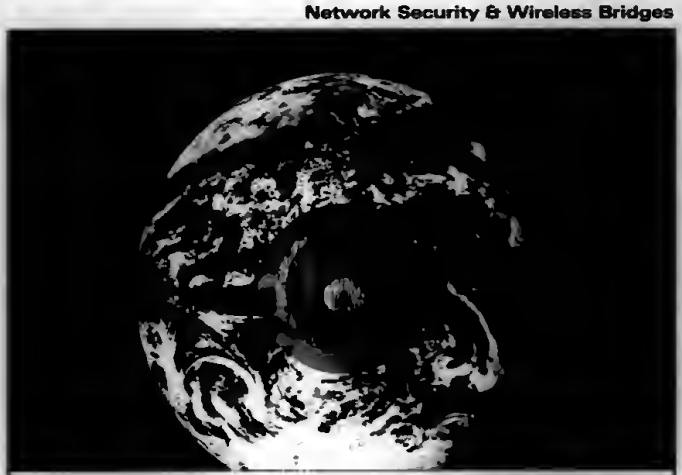

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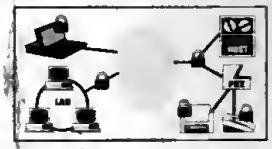

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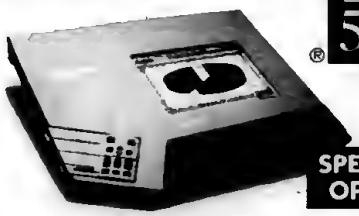

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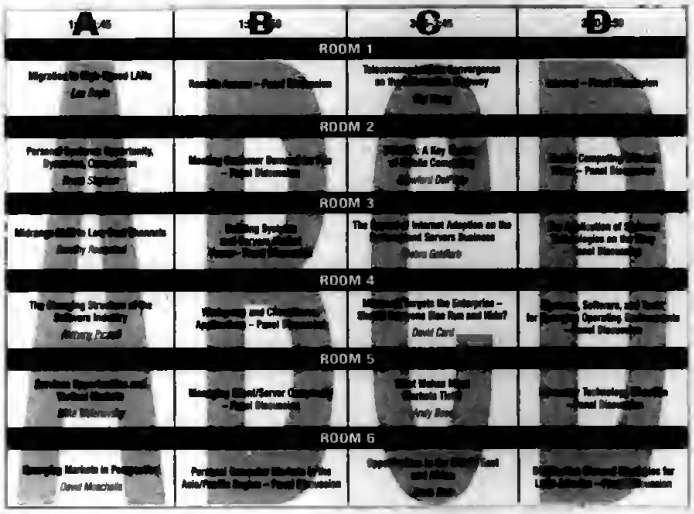

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Feb. 10 Stock Ticker

Gainers

Percent

Commodore Corp	37.5
American Power Conversion	24.6
TeleCard Systems	22.5
MathSoft	22.2
Pemrel Data Comm Networks	21.7
Sierra Semiconductor(M)	20.4
Anacomp Inc.	20.0
Rasterops	20.0

Dollar

FORE Systems Inc.(M)	8.75
Micron Technology(M)	5.50
LSI Logic Corp (M)	5.00
Texas Instruments	4.63
Cirrus Logic	4.63
Intel Corp (M)	4.00
Wall Data Inc.	3.88
American Power Conversion	2.88

Losers

Percent

Proteon Inc.	-16.1
Dataram Corp.	-14.5
MicroFocus	-8.6
Netrix Corp.	-8.6
Chips and Technologies	-8.5
Advanced Logic Research	-7.9
Sapiens Intl. Corp N.V.	-7.5
Compression Labs Inc.	-7.2

Dollar

Peoplesoft	-2.00
Progress Software Corp.	+1.50
Powersoft	-1.38
BMC Software Inc.	-1.38
Xerox Corp.	-1.50
Tandy Corp	-1.75
Proteon Inc.	-1.75
Sybase Inc.	-1.13

Texas Instruments, Inc. stock rose last week after Wall Street analysts predicted demand for the company's chips would increase. Other semiconductor stocks also rose as a result of the announcement.

[redacted]

Outsourcing sector growing

Re-engineering. Rightsizing. Downsizing. All of these are popular phrases bandied about by computer services outsourcing vendors, including two of the largest — Computer Sciences Corp. (CSC) and Automatic Data Processing, Inc. (AUD).

With U.S. businesses farming out computer services more and more, the sector is seeing growth in stock values and earnings. Jeffrey Newman, an analyst at Raymond James & Associates, Inc. in St. Petersburg, Fla., said in a recent report that domestic commercial business would be the primary driver for CSC's revenue growth this year. This quarter, the El Segundo, Calif.-based company chalked up more than $2 billion in U.S. outsourcing contracts.

And as the importance of its bread-and-butter federal government business decreases, CSC can look to the largely untapped international market for new growth. While some analysts have predicted earnings per share of $2.10 for the stock this year, Newman has upped his estimate to $2.35, with a 12-month target of $56 per share.

Mark Jordan, an analyst at A. G. Edwards & Sons in St. Louis, said Automatic Data Processing is focused mainly on domestic and corporate customers for its payroll processing services. More companies will notice that Automatic Data Processing can perform payroll services cheaper and better than in-house systems, he said. The company currently has 53 regional facilities in the U.S., one in Canada and two in Europe.

With stable service and a steady customer base, Jordan said he expects solid, if not exciting, growth for Automatic Data Processing. "They don't have to pull a rabbit out of the hat to make their numbers," he said. — *Tim Ouellette*

Computer services sector

Outsourcing revenues will more than double from $15.9 billion in 1994 to $36 billion in 1999. That's good news for these stocks.

Ticker	Company	Price	1994 EPS*	1995 EPS*
CSC	Computer Sciences	50⅞	$2.00	$2.35
AUD	Automatic Data Processing	61⅜	$2.53	$2.94
GME	GM Electronic Data Systems	39¾	$1.71	$1.97
FDC	First Data Corp.	51¾	$1.86	$2.22
FFM	First Financial Management	66¼	$2.52	$2.85

*Earnings per share; 1995 amounts are estimates

Source: Raymond James & Associates, Inc., St. Petersburg, Fla., and FirstCall Corp., Boston

Exch	52-Week Range	Feb. 10 Wk Net	Wk Pct
		High	Change	Change
Communications and Network Systems				
OTC	53.25	20.13	3 COM Corp	50.25	1.00	2.0
NYS	44.38	36.25	AMETEK Corp	42.88	-0.63	1.4
NYS	57.13	46.88	AT&T	52.38	1.63	3.2
OTC	19.75	12.75	Banyan Systems Inc	17.00	-0.50	-2.2
OTC	43.88	18.63	Bay Networks Inc	31.63	0.38	1.2
NYS	58.38	48.38	Bell Atlantic Corp	53.38	0.00	0.0
NYS	63.50	50.50	BellSouth Corp	58.38	-0.13	-0.2
NYS	21.50	10.88	Bolt, Beranek & Newman	19.63	1.38	9.3
OTC	15.75	8.00	Brooktrout Technology	10.75	-0.75	-6.5
NYS	53.00	33.05	Cabletron Systems	42.25	1.88	9.6
OTC	43.13	10.00	Centigram Communications	15.50	1.25	8.8
OTC	50.50	37.00	Compcom Corp	46.75	2.75	6.3
OTC	40.75	18.75	Cisco Systems Inc	35.25	-0.88	2.4
OTC	14.25	6.13	Compression Labs Inc.	8.00	-0.63	-7.2
OTC	11.25	5.13	Computer Network Tech	7.38	0.69	10.6
OTC	25.00	7.50	CrossComm	13.25	0.63	5.0
OTC	6.13	2.00	Data Switch Corp. (M)	3.81	0.06	1.6
OTC	38.25	17.88	DSC Communications	35.75	1.88	5.5
OTC	76.00	20.00	FORE Systems Inc. (M)	75.00	8.75	13.2
NYS	35.88	30.00	General Datacomm Inds.	34.50	0.38	1.6
NYS	34.13	25.50	GTE Corp.	33.50	-0.38	-1.1
NYS	80.50	77.88	ITT Corp (M)	94.75	-0.13	-0.1
OTC	27.75	17.25	MCI Communications Corp	20.38	1.13	5.8
OTC	15.75	0.75	Micom Communications Corp	0.00	0.50	6.7
OTC	12.00	4.50	Microcom Inc.	11.25	0.00	0.0
OTC	10.50	8.00	Netrix Corp.	8.69	-0.81	-8.6
OTC	8.00	3.75	Network Computing Devices	5.63	0.63	12.5
OTC	27.75	2.38	Network Equipment Tech	29.50	1.75	7.1
OTC	37.75	23.88	Newbridge Networks Corp	27.25	1.63	6.5
OTC	9.50	5.06	Network Systems Corp	6.88	0.31	4.6
OTC	66.00	29.50	Newbridge Networks Corp	61.63	2.62	4.7
NYS	37.75	26.00	Northern Telecom Ltd.	34.63	-0.25	-0.7
NYS	18.25	13.38	Novell Inc.	20.00	2.88	16.0
NYS	40.75	33.25	Nynex Corp	38.25	-0.38	-1.0
OTC	30.00	19.50	Octel Communications Corp	22.75	1.50	7.1
OTC	36.75	10.75	Optical Data Systems Inc.	13.25	0.75	5.3
OTC	3.50	2.13	Pemrel Data Comm Networks	3.50	0.63	21.7
OTC	26.13	10.00	Picturetel Corp	24.25	-0.75	-3.0
OTC	8.13	3.19	Proteon Inc.	6.50	1.25	10.1
OTC	14.38	2.75	Racotek Inc.	4.63	0.00	0.0
OTC	11.00	3.63	Retix (L)	3.81	-0.06	1.6
NYS	23.25	12.44	Scientific Atlanta Inc.	21.38	0.38	1.8
NYS	44.38	36.75	Southwestern Bell Corp	43.00	0.13	0.3
NYS	40.13	25.88	Sprint Corp	30.38	0.88	3.0
OTC	31.63	13.38	Standard Microsystems Corp	29.75	0.13	0.4
OTC	43.25	6.50	Stratacom Inc	38.25	-0.50	-1.3
OTC	15.25	3.88	Telebit Corp	4.75	0.25	5.6
OTC	55.50	24.00	US Robotics (M)	52.75	0.50	1.0
NYS	63.25	34.63	US West Inc.	38.25	0.38	1.0
OTC	28.25	12.75	Xircom	16.25	0.13	0.8
OTC	28.00	8.88	Xylogics Inc (L)	26.75	2.25	9.2
PCs and Workstations						UP 0.48%
OTC	7.50	3.50	Advanced Logic Research	4.38	-0.38	7.9
OTC	68.00	20.63	Apple Computer Inc.	43.50	2.13	5.1
OTC	33.00	10.38	AST Research Inc	26.00	1.25	8.5
NYS	44.38	20.50	Compaq Computer Corp	37.50	0.88	2.4
OTC	47.75	20.00	Dell Computer Corp.	43.44	-0.19	0.4
OTC	25.25	9.25	Gateway 2000 Inc.	21.00	-0.31	-1.5
NYS	107.50	71.88	Hewlett Packard Co	104.75	1.63	1.6
NYS	33.88	18.75	Silicon Graphics	33.13	0.50	1.5
OTC	37.63	28.75	Sun Microsystems Inc.	32.00	-0.63	1.9
NYS	52.38	30.75	Tandy Corp	46.13	-1.75	3.6
OTC	11.75	2.38	Zeos International Ltd	10.25	0.38	3.8
Computer Systems						UP 1.48%
ASE	12.00	4.25	Amdahl Corp	10.75	0.00	0.0
NYS	8.88	4.38	Cray Computer	6.50	-0.25	3.7
OTC	2.25	0.50	Cray Computer	1.56	0.00	0.0
NYS	99.75	10.63	Cray Research Inc	11.50	0.25	1.6
NYS	12.00	6.88	Data General Corp	8.50	0.25	3.1
NYS	38.75	18.25	Digital Equipment Corp	35.00	0.00	0.0
OTC	4.38	1.72	Encore Computer Corp	2.94	0.38	14.8
OTC	11.25	6.50	Harris Computer Systems Corp	13.25	0.75	5.8
NYS	78.00	51.38	IBM	75.50	0.38	0.5
OTC	17.75	5.00	Network Frame	6.25	0.50	8.7
OTC	13.75	3.63	Parallan Computer	6.50	-0.13	-1.8
OTC	30.00	5.38	Pyramid Technology	15.88	0.13	0.8
OTC	21.25	11.13	Sequent Computer Sys.	10.50	-0.25	-0.8
OTC	6.84	3.13	Sequoia Systems Inc.	4.31	0.25	6.2
NYS	39.88	22.75	Stratus Computer Inc	28.75	1.25	4.5
NYS	19.75	10.50	Tandem Computers Inc	17.50	0.00	0.0
NYS	21.50	3.88	TeleCard Systems	6.13	1.13	22.5
NYS	16.50	8.75	Unisys Corp	9.75	0.50	5.4
Software						UP 1.41%
OTC	38.50	21.50	Adobe Systems Inc.	31.75	2.25	7.6
OTC	6.38	2.50	American Software Inc	3.00	0.13	4.3
OTC	41.50	23.25	Autodesk Inc.	34.25	-0.50	1.4
OTC	5.50	1.75	Bachman Info System (M)	4.88	0.38	8.3
OTC	29.00	20.50	BGS Systems Inc	26.50	0.81	3.2
OTC	71.00	40.75	BMC Software Inc	57.75	-1.38	-2.3
OTC	29.00	15.17	Boole & Babbage (M)	28.50	0.00	0.0
OTC	15.13	6.00	Borland Int'l. Inc.	7.94	0.31	4.1
OTC	22.25	6.00	Brock Control Systems Inc	7.31	0.91	12.5
OTC	4.00	1.75	CE Software	3.63	0.38	11.5
ASE	30.33	7.00	Cheyenne Software Inc.	15.00	0.25	1.7
OTC	18.00	9.75	Cognos Inc (M)	18.50	2.13	13.0
NYS	55.00	27.38	Computer Associates	54.63	1.88	3.6
OTC	5.50	2.50	Computervision Corp (M)	5.38	0.50	10.3
OTC	49.25	31.75	Computone Corp	37.00	0.50	1.4
OTC	17.25	9.00	Consilium Inc.	16.75	1.00	6.3
OTC	16.75	10.13	Corel Corp	11.88	0.75	6.7
OTC	14.25	7.25	Database Technologies Inc.†	10.75	0.00	0.0
OTC	6.75	2.25	Easel Corp	3.00	0.13	4.3
OTC	33.25	14.25	Filemkr Corp. (M)	32.75	-0.13	-0.4
OTC	12.50	3.00	Gain Dimension	4.50	0.25	5.9
OTC	19.25	8.13	Frame Technology	17.50	0.00	0.0
OTC	35.25	11.50	FTP Software Inc	29.63	-0.13	-0.4
OTC	11.00	7.00	Group1 Software	9.75	0.50	5.4
OTC	11.75	6.75	Gupta	11.63	-0.13	-1.5
OTC	10.75	5.13	Hogan Systems Inc.	5.63	0.00	0.0
OTC	40.50	10.00	IMRS	37.75	0.63	1.7
OTC	28.50	11.25	Information Resources	14.50	0.50	3.6
OTC	38.25	14.25	Informix Corp. (M)	37.50	3.13	9.1
OTC	13.13	7.38	Intergraph Corp (M)	12.50	1.06	9.2
OTC	8.25	4.50	Interleaf Inc	6.63	0.50	12.1
OTC	18.25	8.63	Intersolv Inc.	14.63	-0.38	-2.5
OTC	73.25	27.00	Intuit Inc.	68.50	3.06	4.7
OTC	37.25	19.00	Legent Corp	29.75	-0.50	-1.7
OTC	66.50	29.75	Lotus Development	42.00	2.25	5.0
OTC	17.75	4.38	Magic Software Enterprises	6.44	0.06	1.1
OTC	15.50	4.00	Mathematics Group Inc.	10.75	0.50	4.9
OTC	37.50	14.29	Mathsoft Corp	29.00	-0.25	1.0
OTC	6.75	1.44	MathSoft	2.75	0.50	22.2
OTC	20.25	6.50	McAfee Associates	18.25	1.75	10.6
OTC	17.25	9.38	Micron Graphics	12.88	-0.63	-4.6
OTC	20.00	11.50	Micro Focus	11.00	1.13	8.6
OTC	11.75	4.63	Microgram Inc.	9.75	0.38	3.3
OTC	65.75	38.00	Microsoft Corp	60.25	1.00	1.7
OTC	45.00	11.25	Netmanage Inc.	43.00	0.25	0.6
OTC	46.50	26.25	Oracle Corp	44.31	-0.19	0.4
OTC	40.25	21.50	Parametric Technology	37.38	-0.88	2.3
OTC	24.50	13.38	ParcPlace Systems Inc.	18.25	0.50	2.8
OTC	39.50	13.00	Peoplesoft	26.00	2.00	8.3
OTC	8.50	6.50	Phoenix Technologies	8.00	0.13	1.6
OTC	67.25	35.50	Powersoft	71.63	1.38	1.9
OTC	14.75	3.50	Platinum Software	8.50	0.25	3.0
OTC	24.29	10.25	Platinum Technology	23.00	2.13	10.2
OTC	58.75	27.00	Progress Software Corp.	58.00	1.50	2.7
OTC	0.25	1.88	Quarterdeck Office Sys. (M)	1.88	0.06	12.7
OTC	22.50	9.50	Rainbow Technologies Inc	16.88	-0.50	2.9
OTC	9.75	2.00	Rasterops	4.50	0.75	20.0
OTC	7.13	2.88	Ross Systems	4.75	0.00	0.0
OTC	16.00	0.50	Sapiens Int'l. Corp N.V.	2.31	-0.19	7.7
OTC	28.63	9.75	Softkey International Inc. (M)	25.50	0.13	0.5
OTC	7.63	3.00	Software Publishing Corp	3.75	-0.24	-6.1
OTC	10.00	5.00	State of the Art	9.00	-0.38	-4.0
NYS	19.38	25.00	Structural Dynamics Research	16.75	0.69	1.8
OTC	10.50	3.63	Structural Dynamics Research	6.44	-0.06	1.0
OTC	57.00	35.25	Sybase Inc.	44.63	1.13	2.6
OTC	21.13	9.88	Symantec Corp	18.69	-0.19	-0.9
OTC	58.50	33.00	SyncSort	48.88	2.50	5.1
OTC	20.38	10.69	System Software Assoc. (M)	18.25	1.75	10.0
OTC	6.13	3.25	Triplus Corp	4.50	0.38	7.7
OTC	10.00	7.88	Viewlogic Systems	8.50	0.25	2.7
OTC	23.25	12.25	VMark Software Inc	15.25	0.75	5.2
OTC	18.25	5.50	Walker Interactive Systems	7.62	0.00	0.0
OTC	60.00	29.25	Wall Data Inc.	43.00	3.88	9.9
Semiconductors						UP 0.42%
NYS	32.25	21.00	Advanced Micro Devices	31.25	-0.63	2.0
NYS	26.50	16.31	Analog Devices Inc.	22.88	0.88	4.0
OTC	17.69	10.75	Atmel Corp	16.00	1.38	9.1
OTC	8.88	5.63	Chips and Technologies	6.75	0.63	8.5
OTC	46.50	21.00	Cirrus Logic	32.88	4.63	16.4
NYS	26.88	11.88	Cypress Semiconductor Corp	20.25	1.13	4.5
NYS	20.13	13.38	Dallas Semiconductor	17.13	0.75	4.6
OTC	31.50	14.75	Integrated Silicon Systems	28.00	2.75	10.9
OTC	78.75	56.00	Intel Corp (M)	77.75	4.00	5.4
NYS	50.63	30.75	LSI Logic Corp (M)	50.63	5.00	11.0
OTC	24.88	14.75	Lattice Semiconductor (M)	23.88	0.00	0.0
NYS	51.75	22.95	Micron Technology (M)	51.75	5.50	11.9
NYS	63.13	42.13	Motorola Inc.	62.13	0.38	0.6
NYS	25.00	14.38	National Semiconductor	18.25	-0.88	4.6
OTC	21.50	6.75	Sierra Semiconductor (M)	21.50	3.50	20.4
NYS	89.50	63.25	Texas Instruments	77.88	4.63	6.1
OTC	16.50	10.25	VLSI Technology	13.94	0.25	5.7
OTC	0.75	1.78	Weitek	3.25	-0.13	3.7
ASE	20.38	11.50	Western Digital Corp	16.50	1.00	6.4
OTC	63.75	29.00	Xilinx	62.75	1.00	1.6
OTC	37.75	24.75	Zilog Inc.	30.00	-0.50	1.6
Peripherals and Subsystems						UP 2.91%
OTC	30.50	14.50	American Power Conversion	26.00	3.88	24.0
OTC	27.25	19.75	Banctec Inc. (L)	26.71	-0.71	4.9
OTC	5.25	1.25	Comdex Corp	3.75	-0.25	6.3
ASE	5.00	1.38	Cognitronics Corp.	3.44	0.94	37.5
NYS	20.50	9.00	Conner Peripherals	10.63	-0.13	1.2
OTC	24.00	8.71	Creative Technologies Inc.	12.38	-0.56	2.9
OTC	7.50	3.50	Data Race Inc.	6.63	0.13	1.9
ASE	8.25	4.13	Daybase Corp	5.00	1.00	14.5
OTC	20.00	12.50	EMC Corp	17.25	0.25	1.4
OTC	15.00	1.11	Exabyte Corp.	14.75	1.25	9.3
OTC	18.02	11.25	Evans & Sutherland	13.00	-0.25	-5.9
OTC	24.00	14.00	Exabyte	58.00	0.25	2.4
OTC	24.25	1.00	Intelligent Info Systems	6.00	0.50	14.1
OTC	6.06	1.60	Iomega Corp (M)	5.69	0.61	7.7
OTC	9.00	2.00	IPL Systems Inc.	4.38	0.63	16.7
OTC	29.50	17.00	Komag Inc.	25.00	-0.88	3.4
OTC	8.01	2.01	Maxtor Corp	3.13	-0.88	-0.0
OTC	11.63	6.88	Micropolis Corp	9.50	-0.56	5.6
OTC	20.25	9.25	Parallel Micro Inc	13.88	1.88	15.6
OTC	20.75	4.67	Printronix Inc.	18.75	1.25	6.8
NYS	10.75	6.88	QMS Inc	7.88	0.00	0.0
OTC	20.25	11.63	Quantum Corp	15.25	0.56	3.8
OTC	18.75	2.38	Radius Inc	13.00	-0.63	-4.6
NYS	14.13	8.38	Reconton International	7.88	0.13	1.6
OTC	7.88	4.63	Ricoh Inc	6.25	-0.25	3.8
OTC	66.00	26.13	Seagate Technology	36.13	0.06	0.0
NYS	61.50	21.00	Storage Technology	31.13	0.81	2.8
NYS	80.50	24.88	Tektronix Inc	34.38	2.13	6.6
NYS	112.75	90.63	Xerox Corp	100.75	-3.50	3.4
Services						UP 2.84%
OTC	20.13	12.13	American Mgmt Systems	20.13	1.00	5.2
NYS	4.25	1.75	Anacomp Inc	2.25	0.38	20.0
NYS	21.75	14.50	Analysts Int'l	20.00	-0.50	2.4
NYS	61.63	47.01	Auto Data Processing	60.75	0.75	1.1
OTC	28.00	14.00	Cambridge Tech Partners (M)	28.00	1.25	13.8
NYS	30.63	20.50	Ceridian Corp (M)	29.75	0.38	1.3
NYS	24.63	17.75	Comdisco Inc (M)	25.50	0.75	3.0
OTC	18.00	8.25	Computer Horizons	16.75	0.63	4.1
NYS	52.63	35.13	Computer Sciences	50.50	0.38	0.7
NYS	10.50	7.00	Computer Task Group (M)	10.25	0.38	3.8
NYS	22.38	6.75	CompUSA Inc	15.38	0.88	5.0
OTC	11.38	6.50	Control Data Systems Inc.	7.19	0.63	9.6
OTC	32.13	6.13	Egghead Discount Software	11.25	0.00	0.0
NYS	40.13	30.75	General Motors E (EDS) (M)	38.63	1.00	2.6
OTC	21.00	0.00	Inacom Corp	8.38	0.50	6.4
OTC	27.13	7.50	Intelligent Electronics	8.88	-0.11	1.3
OTC	23.50	6.25	Metrus	7.25	0.19	2.7
OTC	32.50	9.25	Micrografx Inc.	18.50	0.50	2.8
OTC	42.00	26.50	Parcplace	40.75	-0.25	0.6
NYS	47.75	24.75	Policy Management Sys.	42.25	2.75	5.5
NYS	26.63	19.75	Reynolds and Reynolds	25.12	1.00	4.1
OTC	24.25	16.75	Sei Corp	17.50	0.00	0.0
OTC	35.63	22.13	Shared Medical Systems	33.88	-0.50	1.5
OTC	8.13	4.00	Shl Systemhouse	6.19	0.25	4.2
NYS	21.50	9.25	Software Spectrum Inc	19.88	0.13	0.6
OTC	40.75	31.00	Sungard Data Systems	40.50	3.13	8.4

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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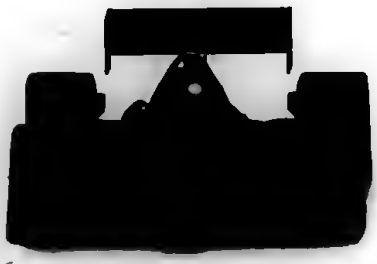

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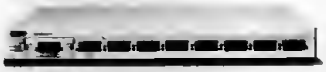

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Jobs

CONTINUED FROM COVER 1

are feeling the pressure to come up with innovative strategies for attracting the technology hotshots. After that, the challenge is to keep them from jumping ship when the inevitable better offer comes along.

Retaining IS talent, O'Brien said, "is like being in a marriage. If you're happy, you're not going to foot around."

Helping to create a better balance betweeo workers' professional aod personal lives is one of the more popular emerging strategies.

"We have a child care center now, which people who come in to interview ask about," said Robert J. Cassiliano, a senior operating officer who also oversees human resources at Salomon, Inc.'s business technology organization in Rutherford, N.J.

Net demand

Networking skills are clearly in the forefront of employer demand, followed by skills in Unix, PCs, relational databases, Windows and C, according to Chuck Litecky, a professor of information systems and co-author of the Mississippi State University IS jobs study.

Big draws at Barnett Technologies, Inc., the IS arm of $40 billion Barnett Bank, include easy access to a YMCA, a company-owned outdoor jogging track and an on-site health care facility, all of which are located adjacent to the company's headquarters in Jacksooville, Fla.

Turnover problems

But not all IS managers are in a position to make prospective staffers such attractive employment promises. And that hurts their chances of signing up the best.

"We had two people leave last year because they wanted to work from home," said David Penrose, secood vice president of information technology at Principal Health Care, Inc. in Rockville, Md. "We have significant interest in telecommuting from developers, and IS managers are strong advocates. But the problem is, senior management doesn't see the value in it yet."

As for the two developers who left Principal, "They found a company that would allow them to work from home plus complement their home offices with whatever equipment they needed," Penrose said.

A lack of either training or availability of new projects also works against companies on IS star searches. Maintaining a balance between interesting work such as project development and "dull stuff" snch as application maintenance is vital to young professionals, said Brian Hoffman, a recruiter and partner at Wintor, Wyman & Co. in Waltham, Mass.

"It's oot that they all want to be able to go to work wearing six earrings and a stovepipe hat," Hoffman said. "Bnt they need to be involved creatively in making decisioos about how projects get done."

"People who have these skills want to apply them," agreed Laraino Rodgers, vice president of information processing at Bell Atlantic Corp. Guaranteed employment is oot on their minds, and extensive benefits are one of the last things job seekers ask about during interviews, she said. "They want a business with interesting initiatives," she said.

The following are expected salaries in East Coast cities for positions requiring seven years' experience or more

	New York	Washington	Boston
Network administrator	$72,000	$60,000	$57,000
Application developer	$72,000	$64,000	$60,000
Database developer	$77,000	$63,000	$70,000
X Window specialist	$80,000	$65,000	$65,000
Object-oriented programmer	$80,000	$72,000	$60,000

Source: Foncom Systems, Inc., New York

Money motivates

But make no mistake: Money matters. In the New York or Boston areas, for example, an experienced object-oriented programmer can command a salary of approximatoly $80,000 (see chart).

"Money is still the big motivator," said Suzanne Fairlie, president of ProSearch, Inc., a recruitment firm in Conshohocken, Pa. That is why many companies continually benchmark the salaries their IS staffers earn.

Salomon, which is known on Wall Street for its strong base of Unix personnel, periodically adjusts its IS staffers' pay.

"Unix people are an extremely hot commodity right now," Casdiliano said. "What we do is adjust their compensation according to market value, and that's how we try to keep them."

But that adjustment can be downward as well as upward, he emphasized. "We are open from the beginning in telling people that they shouldn't go ont and spend all of their bonus money in case market values shift the other way," he said. "Bnt to date, that hasn't happened."

How about a job overseas? See page 129 to find out what one might be like.

Retraining a risky option

Rather than brave the barren open market to hire new recruits, more IS managers are turning to retraining as a solution to their staffing needs.

Current employees, they say, have valuable knowledge about the company's business that no new hire can offer. But the retraining option is not risk-free. Retraining is not only costly and time-consuming, but it can also turn employees into even hotter commodities.

Todd Gillespie, vice president and chief information officer at Skandia America Group in New York, maintained that retraining is still worth the gamble. But he said he is well aware of the skill drought and knows there will be plenty of scavengers after his best workers.

"Is [training] a risk? You bet it is," Gillespie said. "We might get burned later on in the year as they get skilled and the market comes knocking on the door. But I'm willing to give in to that."

Fewer than half of 50 firms surveyed said even 25% of their staff could build a client/server application

Once IS managers decide to retrain, they face the added dilemma of choosing which staff members to redeploy. According to a recent report by Forrester Research, Inc. in Cambridge, Mass., on the lack of client/server skills in Fortune 1,000 companies, that choice might not be easy to make. The problem: Most companies surveyed did not have a pool of staff members with client/server skills.

"IS shops are filled to the rafters with Cobol, CICS and PL/1 jocks," the report said. And fewer than half of the 50 companies surveyed reported that even 25% of their current staff was skilled enough to actually build a client/server application.

In the end, retraining may translate into increased cost for IS managers who decide to take the plunge. Two-thirds of the survey respondents said they expect per-developer training costs to increase in the next two years, and 24% predicted a rise of more than 50%, according to the report. — *Erin Callaway*

Client/server

IMRS stakes claim in busy market

By Rosemary Cafasso

IMRS, Inc. plans to step into the already-crowded client/server financial applications market this week with the launch of Hyperion Financials.

The $113 million company will introduce a first round of financial modules, including general ledger and accounts payable, along with customization tools. The products are scheduled for availability this quarter.

IMRS plans subsequent shipments of purchasing, accounts receivable and fixed assets applications to fill oot the product line, according to the company.

Industry observers said the Stamford, Conn.-based financial software company will have a hard time taking on such market heavyweights as SAP America, Inc. in Philadelphia and Oracle Corp. in Redwood Shores, Calif. But they also noted that unlike some of the other players in the client/server market, IMRS will not start from ground zero. It has an installed base of about 2,000 users for its financial management, consolidation and reporting tools.

Industry observers said IMRS will have a hard time taking on such heavyweights as SAP America, Inc. and Oracle Corp. But they also noted that unlike some of the other players in the client/server market, IMRS will not start from ground zero

"It gives them a start from the top of some organizations where they already have a presence," said Jeff Comport, an analyst at Gartner Group, Inc. in Stamford, Conn.

Looking at all the options

American Greetings Corp. in Cleveland, for example, has been using the IMRS financial consolidation tool set to pull data from mainframe-based financial systems, pool it and then analyze it.

"We will make the jump [to client/server] within the next two or three years, and we would consider [IMRS] an option," said John Capka, manager of accounting services at American Greetings.

However, SmithKline Beecham PLC in Philadelphia said that although it will continue to use the Hyperion analysis tools, it is doubtful it will use the financial applications. The pharmaceutical firm has already begun deployment of financial software from J. D. Edwards & Co. in Denver at several locations, said Alan Walter, manager of business development at SmithKline Beecham.

Saks Fifth Avenue selects client/server financials. See page 96.

WYSIWYG

Read all about it

Two new books are giving parents a helping hand in wading through the heaps of software for children.

That's Edutainment – A Parent's Guide to Educational Software (Osborne/McGraw-Hill, Berkeley, Calif.) focuses on educational software and includes a CD-ROM with demos and full working versions of many titles.

Kidware, A Parent's Guide to Software for Children (Prima Publishing, Rocklin, Calif.) focuses on both games and learning software.

How do I love thee?

You don't have to turn to your muse to pen the perfect Valentine's Day card this year; just grab **101 Love Letters software.** The software includes prewritten letters for those with writer's block and provides numerous expressions for new love, secret admirers and lost love. (Great Bear Technology, Inc., Moraga, Calif. $39)

Extra! Extra!

Hearst Corp. in New York has created an Internet newsstand that offers subscriptions to more than 250 magazines. Found at **http://mmnewsstand.com**, The Multimedia Newsstand also lets viewers browse through selected text and pictures from various magazines, view a daily comic strip, purchase videos and CDs, trade collectibles and take a daily trivia quiz.

WYSIWYG compiled by Tim Ouellette. Illustrations by David Marshall.

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Inside Line

Comdex on the block?

Comdex, that shameless selling ground for the computer industry, may be up for sale. Comdex huckster Sheldy Adelson is negotiating to sell his firm, The Interface Group, to Japan's Softbank, which recently bought Ziff-Davis' trade show operation (Networld/Interop). Well-placed sources at Interface dodged questions last week but were careful not to deny the rumored deal. Of course, as one ex-Interface employee pointed out, Adelson could be repeating past maneuvers when he put Interface on the block to get a value that would impress banks into lending him money for other ventures, such as the Sands Hotel and Convention Center in Vegas.

The never-ending story, notebook-style

Looking for a better notebook? IBM, the current technology leader, is casting its net with Butterfly, a hot-to-trot subnotebook with a full-size keyboard and screen. But the ship date for this flighty critter has slipped several times, and now internal sources say March 7 is the date it will finally emerge from its cocoon.

Philippe Kahn in slimware?

Philippe Kahn, former CEO of Borland — a man who does nothing in a small way — is reportedly snatching up his Sidekick and starting a new company. The company, called Starfish Software, will be based in Santa Cruz, Calif. The consumer-oriented products that Kahn will sell represent the alpha and omega of Borland's history. Sidekick, a personal information manager, is one of Borland's first products. Dashboard, a Windows utility, was recently purchased from Hewlett-Packard. Borland officials declined to comment on the report.

Well versed in objects

IBM finally has at least one object database maker to support its new object development tools. Versant is expected to announce this week a gateway of sorts to link the Versant object database to IBM's VisualAge and Distributed Smalltalk products. Now all IBM has to do is coax Object Design, which IBM partly owns, to better support those tools.

Look Ma, no wires!

Cylink in Sunnyvale, Calif., next week will unveil an update to its AirLink wireless radio transmission system — making it the first vendor to provide wireless data transmission over the wide area at full T1 speeds, or in excess of 1.5M bit/sec. The AirLink system consists of new interfaces for its transceiver and receiver products as well as software that allows the system to be controlled from any PC or portable computer, sources said. AirLink will be able to transmit over distances of up to 20 miles.

Compaq gains insight

Compaq plans to make those pesky desktop PCs easier to manage, say sources close to the company. Compaq will put its Insight Manager software on a line of Pentium desktops it will introduce the week of March 6, the sources said. The line will replace its ProLinea and DeskPro/XE value and midrange corporate desktop lines, and it will be based on Intel's Pentium 33/100-MHz, 60/90-MHz and 50/75-MHz processors, according to sources.

During last week's Demo '95 conference in Palm Springs, Calif., one of the vendors showed a phony CNN news clip with a gab announcer stating that the Roman Catholic Church had negotiated a deal to be acquired by Microsoft after all. While showing a clip of the pope waving to a crowd, the announcer said, "The pope described the deal as a 'blessing.'" Later on, another wag suggested that Microsoft wanted the church only to gain the rights to the Gregorian calendar — making it possible to legally rename next year as 1995. But while we await the ascension of Windows 95, why not take a few moments to pass along news tips to Computerworld via our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.

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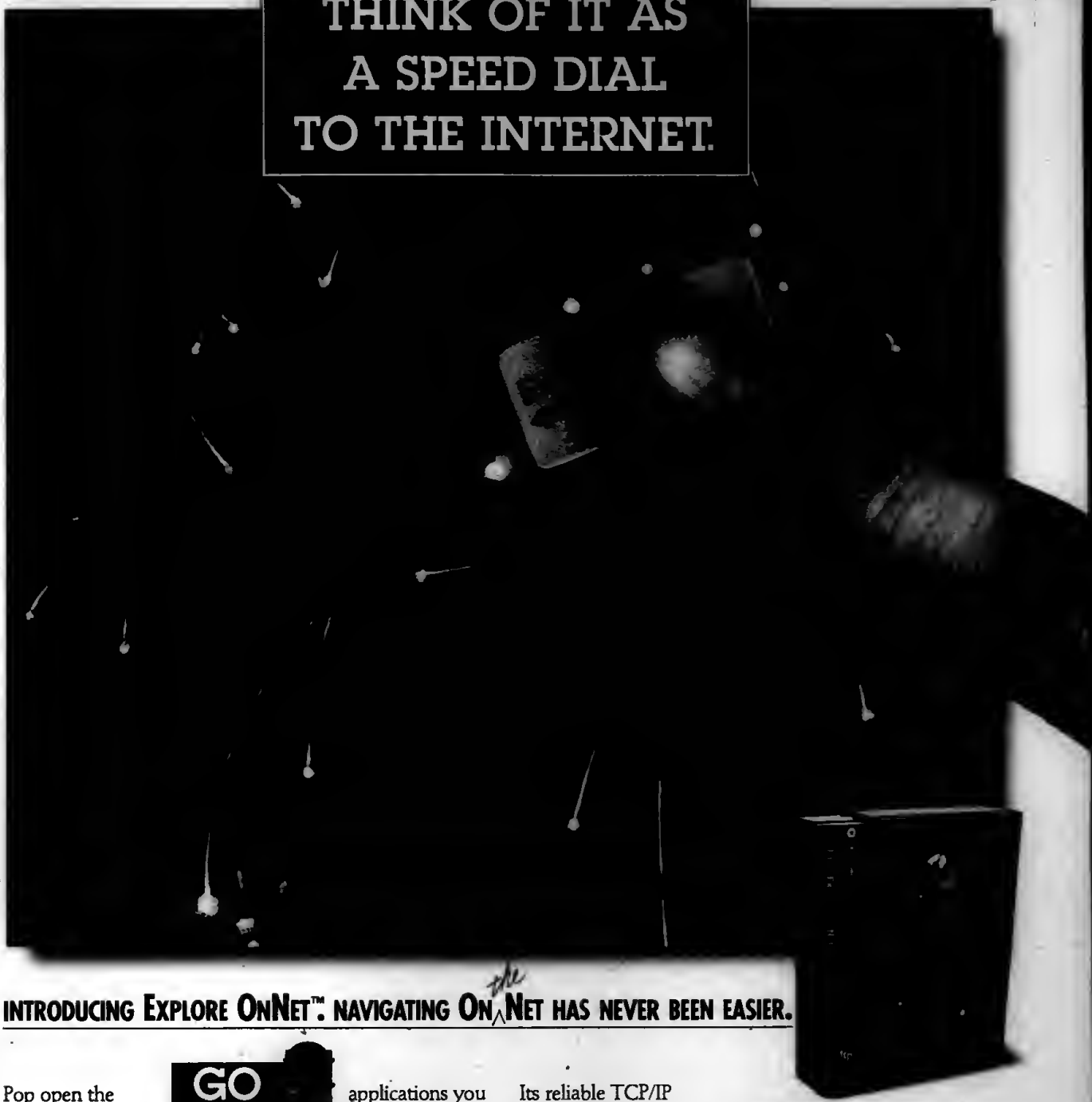

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